A Mixed Methods Evaluation of a Canterbury Breast Feeding Support Service: Examining the impact of the Waitaha Primary Health Baby Feeding Service on individual breastfeeding experience, maternal wellbeing and bonding/attachment.

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Abstract

Research has evidenced the nutritional, health and wellbeing benefits of breastfeeding for both mother and baby in producing best outcomes in comparison to alternatives such as formula. Officially, the World Health Organisation (WHO) recommends six months exclusive breastfeeding in order to achieve optimal developmental outcomes. In New Zealand, the Ministry of Health (MOH) also follows these recommendations and has set targets in line with those of those of the WHO. However, internationally and nationally, the actual *exclusive* breastfeeding, and *any* breastfeeding rates fall short of that outlined by the WHO and the MOH. Research examining the factors involved in the low rates of breastfeeding maintenance has found that the individual breastfeeding experience, and the decision to cease breastfeeding, is complex and multifactorial. Further to this, difficulties with breastfeeding have been found to have the potential to negatively impact the psychological wellbeing of both mother and infant. Accordingly, breastfeeding maintenance and wellbeing support services have been created at a global and national level to improve breastfeeding rates and enhance maternal/infant wellbeing. This thesis examines the impact of a Baby Feeding Service, provided in Canterbury by Waitaha Primary Health, using a mixed methods single-case experimental design to examine individual experience of breastfeeding and outcomes of engagement with the service. Repeated measures over a 6-week period and follow-up interviews collected individual data on breastfeeding difficulty, confidence, wellbeing and attachment, which were examined at the individual and group levels. Findings were mixed in terms of the direct impact of the service on measures and breastfeeding maintenance. Previous breastfeeding experience/exposure potentially influenced outcomes, suggesting there is an increased need for breastfeeding support antenatally. However, all participants had experienced significant distress early post-birth and reported their engagement with the service as a positive and reassuring.

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Definition of Breastfeeding Terms

Exclusive Breastfeeding	The infant has only been fed breastmilk (either from the breast or expressed) and any prescription medicines from birth (Ministry of Health, 2012)
Full Breastfeeding	Over the past 48 hours, the infant has only consumed breastmilk and a small amount of prescription medicines and water (no other solids or liquids) (Ministry of Health, 2012)
Partial Breastfeeding	Over the past 48 hours, the infant has consumed some breastmilk and some formula or other solid food (Ministry of Health, 2012)
Complementary Feeding	Breastmilk (including expressed or from a wetnurse) combined with other solid or semi-solid foods (Ministry of Health, 2012).

List of Abbreviations

BFHI	Baby Friendly Hospital Initiative
BFS	Baby Feeding Service
EMA	Ecological Momentary Assessment
EP	Electronic Prompts
EBF	Exclusive Breastfeeding
GI	Gastrointestinal Infection
HDEC	Health and Disability Ethics Committee NZ
HQSCNZ	Health Quality and Safety Commission New Zealand
GUINZ	Growing up in New Zealand study
LC	Lactation Consultant
IBCLC	International Board-Certified Lactation Consultant
IBLCE	International Board of Lactation Consultant Examiners
LLLI	La Leche League International
LMC	Lead Maternity Carer
MOH	Ministry of Health NZ
M4M	Mother for Mother
NZ	New Zealand
NZBA	New Zealand Breastfeeding Authority

PND	Post-natal Depression
PROBIT	Promotion of Breastfeeding Intervention Trial
RCT	Randomised Controlled Trial
SCED	Single Case Experimental Design
SEM	Socioecological Model
SES	Socioeconomic status
UNICEF	United Nations International Children's Emergency Fund
WPH	Waitaha Primary Health
WHO	World Health Organisation

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Chapter One: Breastfeeding

The primary aim of this review is to examine the individual experience of breastfeeding and analyse the impact of breastfeeding support on the experience of breastfeeding and maternal/infant wellbeing. However, it is first necessary to explore and examine the development of breastfeeding as a practice (both internationally and within New Zealand). Therefore, this chapter will attempt to introduce the reader to the practice of breastfeeding by providing a brief history of breastfeeding, discussing the health, mental health and wellbeing benefits of breastfeeding for both infants and mothers and comparing breastfeeding with formula and pumping breastmilk. Additionally, this section will discuss the adaptation of the WHO recommendations to the New Zealand health system, compare international and national breastfeeding rates (both historically and currently) and lastly it will international and national public health campaigns aimed at combating low breastfeeding rates.

History of Breastfeeding

Breastfeeding has a long history as the biological norm for feeding infants and up until approximately the 1940-50's it was largely considered an unremarkable and commonplace practice (Coates & Riordan, 2005). However, history has evidenced an increase in the societal expectations of women over time and thus increased consideration and utilization of alternatives to maternal breastfeeding (Coates & Riordan, 2005; Dorothy Parfitt, 1994). An example of these alternatives is the practice of wet nursing or, more specifically, the supplementation of the biological mother's breastmilk by another breastfeeding woman (LeVasseur & Dunlap, 1989; Stevens et al., 2009; Stolzer, 2006). Although the practice of wet nursing largely arose out of a need for mothers that were unable to breastfeed it eventually developed into a paid profession that was usually only available to wealthy, upper-class women (Stevens et al., 2009). Progress in the development of the bottle and the

increasing access to animal milk as an attainable alternative in the 19th century saw rates of breastfeeding fall and infant mortality rates soar, likely due to the expansion and industrialization of the dairy industry and the decline in the quality of available milk (Currier & Widness, 2018; Stevens et al., 2009; Stolzer, 2006). Poor milk quality and the increasing popularity of breastmilk supplementation has been directly linked with high rates of infant mortality, which were as high as 300 deaths per 1000 live births in parts of western Europe in the middle of the 19th century (Currier & Widness, 2018).

Pasteurization, the increasingly hygienic handling of cow's milk, and the availability of newly developed commercial infant formula in the early to mid-20th century meant that breastfeeding practice continued to decline (Castilho & Filho, 2010). Further to this, the necessary shift for many women from home to the workforce during the post-war 1940's-50's and the subsequent increased need for supplementation signified the beginning of the bottle/formula feeding period. Over time this became a culturally accepted norm in infant feeding practice (Coates & Riordan, 2005). However, emerging research examining the benefits of breastfeeding, the risks associated with early supplementation and the promotive efforts of groups such as the La Leche League (LLL) in the 1970's saw the beginnings of a reversal in this decline, with breastfeeding initiation rates beginning to increase somewhat in Western nations (Coates & Riordan, 2005; Thulier, 2009). With the benefits of breastfeeding and the inferiority of infant formula and other supplementation becoming clearer, governments began to make concentrated efforts to promote and encourage breastfeeding as the preferred infant feeding method (Coates & Riordan, 2005; Stevens et al., 2009).

Although still available, the heavy advertisement of infant formula that was common in the 1950's and 1960's decreased with the introduction of marketing codes for infant formula (Coates & Riordan, 2005). These codes were supported by the World Health Organisation (WHO) (Currier & Widness, 2018). Since 1990, the WHO has recommended breastfeeding

as the preferred method of feeding and since 2002 has recommended that breastfeeding be initiated in the first hour post birth and that exclusive breastfeeding (EBF) occur from birth to a minimum age of six months (WHO, 2001). Beyond six months of age the WHO recommends that breastfeeding continue but with the introduction of supplementary liquids/foods (which can include artificial milk formula) up until two years of age (Fewtrell et al., 2007; World Health Organisation, 2001). It is therefore evident that the practice of breastfeeding has been heavily influenced by social and cultural factors that have changed over time as human access to information and evidence-based research has increased and the understanding of breastfeeding and the benefits of breastmilk have developed and expanded.

The Biology of Breastfeeding

Infancy is a particularly important and yet vulnerable period from a nutritional perspective. This is due to the high level of nutrient required to aid optimal growth and development and limited ability of infants to digest food (Robinson, 2015). Research has supported breastmilk as the sole source of food in the first month post-partum due to it being comprised of many nutrients, antibodies, enzymes, amino acids and other fatty acids that are vital to managing malnutrition, developing immunities and aiding optimal growth and physical development in infants (Kramer & Kakuma, 2002). At a population level, the composition of breastmilk is fairly consistent although there is some variation in exact nutritional make-up depending on several factors including length of gestation, the maternal diet, maternal weight, time of feeding, rate of feeding and stage of lactation (Robinson, 2015; Victora et al., 2016). Further to this, research examining the biological make-up of human milk provides evidence that is indicative of the ability of human milk to adapt to the changing nutritional and immunological needs of the infant (Mitoulas et al., 2002; Yang et al., 2014)

Comparison of breastfeeding alternatives – infant formula and expressing breastmilk.

Commercial infant formulas are a highly regulated attempt to duplicate the nutritional composition of breastmilk and are a popular alternative to breastmilk, particularly in developed parts of the world (Boué et al., 2018; Martin et al., 2016). The ability for the nutritional makeup of breastmilk to respond and adapt to the early changing nutritional needs of the infant is one of the factors that ultimately sets breastmilk apart from infant formula from a biological perspective (Boué et al., 2018; McNiel et al., 2010). Additionally, formula milks to are unable to replicate the antibodies that are found in breastmilk via suckling (thus making them less able to provide increased protection from infections and disease, particularly in the early stages of infancy when the immune system is underdeveloped) and differences in digestibility (i.e. breastmilk is generally easier for infants to digest than infant formulas) (Boué et al., 2018). Further to this, the consistency in the make-up of infant formula can also mean that infants individual and changing developmental needs are not being met to the same extent. Although infant formula is a predominantly safe and healthy alternative to breastfeeding, extensive literature indicates that the short- and long-term health, wellbeing and economic benefits of breastmilk outweigh the risks associated with formula feeding (Dieterich et al., 2013; Duijts et al., 2009; Hahn-Holbrook et al., 2013; Robinson, 2015; Victora et al., 2016).

Although time-consuming relative to breastfeeding, expressing breastmilk (using an electric breast pump or by hand) has become a widely used option for mothers who are unable or decide not to breastfeed, but who still want their child to consume breastmilk, either exclusively or partially (Pang et al., 2017). Expressing breastmilk and then delivering with a bottle is generally considered to be preferable to switching to formula feeding if breastfeeding is not possible. There is limited research regarding a difference in the biological composition of pumped breastmilk and breastfeed milk over different stages of

lactation, and whether each method of feeding meet the same dietary needs of the developing infant (Johns et al., 2013; Labiner-Wolfe & Fein, 2013; Pang et al., 2017). The WHO breastfeeding definitions do not differentiate between breastmilk that is being fed from the breast and breastmilk that is being fed from the bottle and expressed milk is included in their definition of exclusive breastfeeding.

However, it has been suggested that expressed breastmilk as a complete alternative to breastfeeding may somewhat impact the development of innate and adaptable immunity due to differences in the immune response of breastmilk when a baby is suckling and when they are being bottle fed breastmilk (Noel-Weiss et al., 2012). Suckling is a mechanism by which infants can communicate to their mother their health needs via the interaction of infant saliva and breastmilk, and through which early innate immunities can develop (Al-Shehri et al., 2015). In other words, suckling is a mechanism by which an immune response is triggered and mothers breastmilk will produce and deliver specific antibodies to boost the immunity of the infant as needed (Al-Shehri et al., 2015; Cacho & Lawrence, 2017). Further to this, expressing breastmilk requires extra handling of milk in regard to any storage and preparation of excess milk which can increase the risk of contamination (Bransburg-Zabary et al., 2015; Johns et al., 2013; Labiner-Wolfe & Fein, 2013). In sum, although there are alternatives available to breastfeeding as a process of delivering infant nutrition such as expressing and use of formula, breastfeeding is the ideal option in terms of it being the most complete and individualised form of nutrition available for infants. Additionally, there is a vast body of literature that evidences the benefits of breastfeeding for both mother and infant that includes, but also goes beyond, the purely nutritional benefits for the infant. These include benefits around infant and maternal physical and psychological health and wellbeing.

The Benefits of Breastfeeding

Infant Health Benefits

Adherence to the breastfeeding recommendations outlined by the WHO is considered the most effective public health intervention available in producing positive health and wellbeing outcomes for infants and may prevent millions of infant deaths worldwide annually (Kramer & Kakuma, 2002). In both developed and developing countries, prolonged breastfeeding has been associated with reduced risk of gastrointestinal infection (GI), respiratory conditions and infant mortality (Kramer et al., 2003; Kramer & Kakuma, 2012; Kramer & Kakuma, 2002). Kramer and Kakuma (2002) produced an early systematic review that examined research from the previous 15 years that studied the effect of different durations of exclusive breastfeeding on the health of the infant/mother dyad. This review ultimately informed the creation of international recommendations around the optimal duration of exclusive breastfeeding (mentioned previously) that were produced by the WHO (World Health Organisation, 2001). The overall findings drawn from the 32 studies reviewed showed that compared with infants that had been mixed fed, infants that were exclusively breastfed during the first six months, had a significantly lower risk of morbidity from gastrointestinal infections in both developing and developed countries (Kramer & Kakuma, 2002).

The WHO (2001) promotes exclusive breastfeeding to age six months as a preventative measure in combating later childhood (and adolescent) obesity by facilitating healthy and normative growth patterns. International scientific literature has supported this public health recommendation, with findings of numerous studies indicating that breastfed infants experience a less rapid weight gain than has been found in infants that receive formula, making them less likely to experience obesity and weight related illness (such as type-two diabetes and high blood pressure) later in life (Baird et al., 2005; Kries et al., 1999; Mardani

et al., 2020; Metzger & McDade, 2010; Ortega-García et al., 2018; Rito et al., 2019; Vafa et al., 2012). In addition to supporting GI and respiratory health and the regulation of weight gain, extended and exclusive breastfeeding has also been linked to the promotion of healthy cognitive development and increased long-term intellectual functioning (Boucher et al., 2017; Michael S. Kramer et al., 2008, p. 2; Lee Hyungmin, 2016; Lenehan et al., 2019). However, when it comes to breastfeeding and cognitive development there is more debate within the literature regarding the strength of the association in comparison to other physical health benefits of breastfeeding. This debate is due largely to the complex and wide-ranging factors that have been found to impact cognitive development in children (e.g., environmental factors such as maternal age, maternal education, socio-economic status (SES) and socio-emotional factors such as attachment) and the use of observational methods of data collection. In line with this debate, some researchers have found that initial findings of a significant effect of breastfeeding are no longer apparent once environmental factors are controlled for (Holme et al., 2010; Smith et al., 2003). Conversely, other literature has found that significant effects remain even when confounding factors are controlled for (Kramer et al., 2008; Lee Hyungmin, 2016; Lenehan et al., 2019).

Therefore, although the literature remains conflicted and inconsistent in regard to the strength of the part that breastfeeding plays in the development of strong cognitive function, it does suggest that extended breastfeeding duration can play a protective role among other highly complex factors that influence cognitive development. Additionally, in reviewing the literature regarding the benefits of breastfeeding on infant health it is evident that although benefits and protective effects of breastfeeding for infants appear to be stronger with breastfeeding exclusivity and increased duration, including breastmilk in the infant diet (even if it is not necessarily exclusive) still has protective benefits when compared with no breastfeeding at all.

Maternal Health Benefits

The health benefits of breastfeeding are not limited to that of the infant, research also demonstrates that there are additional positive health benefits of breastfeeding for mothers (Ciampo & Ciampo, 2018; Hahn-Holbrook, Schetter & Haselton, 2012; Krol & Grossmann, 2018). In the short-term, EBF has been associated with aiding women in shedding pregnancy weight and facilitating/producing lactational amenorrhea (Ciampo & Ciampo, 2018; Hahn-Holbrook et al, 2012). Tightly linked with findings of the benefits of breastfeeding on post-partum weight loss, is evidence of the positive impact of breastfeeding on the maternal development of weight related illnesses later in life such as type-two diabetes, hypertension (both in the short and long term) and cardiovascular disease, as obesity tends to be a precursor to these issues/diseases (Kirkegaard et al., 2018; B. Liu et al., 2010; Natland Fagerhaug et al., 2013; Nguyen Binh et al., 2019; Park & Choi, 2018; Schwarz et al., 2009; Zhang et al., 2015).

Schwarz et al's (2009) study examined the impact of breastfeeding on risk of a large range of health outcomes including obesity, diabetes, hypertension and cardiovascular disease on a large sample American of post-menopausal women. Results for obesity, hypertension and cardiovascular disease were in accordance with the previously discussed studies, in that increased duration of breastfeeding was associated with lower risk of obesity, hypertension and cardiovascular disease. In addition to these findings, results showed that women that had a total breastfeeding duration (duration of breastfeeding for all children) of 12 months or more were less likely to develop diabetes when compared with women who had never breastfed. These results held true even when extraneous factors such as family history, lifestyle and socioeconomic factors were controlled for (Schwarz et al., 2009).

In summation, the studies and results discussed above point to both short- and long-term maternal benefits associated with breastfeeding when compared with not breastfeeding. Additionally, although *any* breastfeeding has been found to be protective factor in lowering risk for obesity, hypertension, cardiovascular disease and type-two diabetes, extended durations of breastfeeding have been associated with the lowest levels of risk. This may be particularly useful for women who are at risk of developing weight related illnesses as a focus when promoting breastfeeding benefits.

Mental Health and Socioemotional Wellbeing benefits of Breastfeeding

The short- and long-term health benefits of EBF for both the infant and mother are well documented in contemporary literature, however evidence pertaining to the benefits of breastfeeding go beyond those relating to purely physical health and cover broader infant and maternal wellbeing such as maternal mental health and attachment. International scientific literature has indicated that early and continued breastfeeding is associated with lower levels of negative/depressed mood and lower levels of perceived stress during the early post-natal period and can therefore act as a protective factor in the development of post-natal depression (PND) (Groër, 2005; Hamdan & Tamim, 2012; Mezzacappa, 2004; Mezzacappa & Katkin, 2002; Tashakori et al., 2012). The early months of caring for a baby can carry with it the experience of many new positive emotions, but also new emotional, physical and psychological demands and thus also be a time of significant stress (Shrivastava, Shrivastava & Ramasamy, 2015). For some mothers, these demands, and stressors can trigger post-natal depression and anxiety (Shrivastava, Shrivastava & Ramasamy, 2015). Symptoms of PND include irritability, low mood, fatigue, anhedonia, insomnia, anxiety, negative thoughts, feelings of hopelessness and loss of appetite and usually develops in the first few months after giving birth (Sit & Wisner, 2009). Mothers displaying PND symptomology are at risk of adverse effects including both short- and long-term outcomes for the new-born infant (and

mother). These adverse effects include: impaired cognitive/emotional/social development, behavioural problems, poor attachment and increased risk of harming themselves or their infant (Cox et al., 2015; Moehler et al., 2006; Shrivastava et al., 2015).

Mezzacappa and Katkin (2002) conducted a study using two experiments (one between subjects and one within subjects) to examine the impact of breastfeeding on the mood and perceived stress in a sample of mothers living in New York. This study was one of the first of its kind to examine the relationship between breastfeeding and mood as it utilised both a within-subjects and between-subject's design. As such, not only were possible differences in the effect of breastfeeding on mood assessed at the group level, they were also at an individual level. Results of the between- subjects experiment showed that mothers who breastfed reported less stress in the previous month than mothers who bottle fed even when social and environmental factors were controlled for. Perhaps more interestingly, the results of the second experiment using a within-subjects design study showed an immediate effect of decreases in negative mood between pre and post feeding while breastfeeding but a decrease in positive mood while bottle-feeding at an individual level.

As mentioned, caring for a new-born is a time of significant physiological and psychosocial stress for mothers, resulting in the increased production of stress hormones that can facilitate the development of PND via inflammatory reactions of the body to increased production and release of these hormones (Corwin & Pajer, 2008; Kendall-Tackett, 2007). High levels of oxytocin and prolactin have been found to have a protective effect on the experience of stress with both hormones acting as a mechanism for inhibiting the release of stress hormones and thus decreasing the stress response and inducing a calming effect (Donaldson-Myles, 2012; Scantamburlo et al., 2009). Although prolactin production surges during pregnancy, it is further accelerated via suckling of infants during breastfeeding and works to increase milk production with cortisol inhibition becoming a by-product of this continued process

(Donaldson-Myles, 2012). In contrast, the prolactin levels of women who do not breastfeed return to normal (pre-pregnancy levels) during the first month's post-partum. Increased oxytocin production facilitates milk ejection during breastfeeding and also plays a role in moderating stress via complex biological pathways thus also inhibiting the production of stress hormones and producing positive mood (Scantamburlo et al., 2009). Like prolactin, oxytocin production decreases in the early post-partum period if breastfeeding practice is not maintained (Donaldson-Myles, 2012).

Research has sought to investigate the role of increased prolactin and oxytocin (particularly oxytocin) during the post-partum period in preventing the development of PND for mothers that breastfeed. Findings of this research largely support the protective effect of breastfeeding via the production of increased oxytocin and prolactin (Cox et al., 2015; Groër, 2005; Lara-Cinisomo et al., 2017; Niwayama et al., 2017). A recent study by Whitley et al (2020) took this research a step further and examined the differences in oxytocin levels of breastfeeding mothers who had depressive/anxious symptomology compared with breastfeeding mothers who did not have any symptoms. Consistent with other research, Whitley et al. (2020) found that on average, mothers who breastfed had higher oxytocin levels during the feed than mothers who bottle-fed. However, the results of this study showed no significant difference in oxytocin levels between mothers who had symptoms at two months post-partum and mothers with no symptoms. These results suggest that the role of oxytocin is perhaps only preventative in nature, in that higher levels of oxytocin released during breastfeeding may assist in preventing post-partum depression developing but is not a mechanism by which PND can be treated.

In 2016, the New Zealand Health Promotion Agency (NZHPA) published findings from the New Mothers Mental Health Survey (distributed in 2015) in order to increase current knowledge and understanding of the prevalence and experience of PND in NZ (Deverick &

Guiney, 2016). In total, 805 mothers that had given birth within the previous two years filled out the online survey with 14% of respondents meeting the criteria for PND according to the criteria of the Edinburgh PND Scale. Other studies have also indicated that the prevalence of PND in NZ sits somewhere between 11-16%, but it is likely that this (like other mental health issues) is under reported due to fear of stigma and judgment (Kvalsvig et al., 2018).

Due to the increased psychological, emotional and physical stressors that come with a new baby, it is hardly surprising that this period can be triggering of depressive symptoms for mothers. It is also logical that the mental health and wellbeing needs of mothers in general during this period are higher and that extra support in many different areas (including breastfeeding) is essential during this highly sensitive period. The impact that difficulty breastfeeding can have on the mental health and wellbeing of mothers of new babies will be discussed in a later section of this thesis.

It is essential to note that the relationship between breastfeeding and PND is a complicated one, in that the directionality of this relationship is not straightforward and does not appear to be unidirectional but rather bidirectional. In other words, although there is evidence to suggest that breastfeeding can act as a protective factor against the development of PND there is also evidence within breastfeeding literature to suggest that mothers displaying symptoms of PND are more likely to cease breastfeeding earlier than mothers without PND (Dennis & McQueen, 2009; Dunn et al., 2006; Hahn-Holbrook et al., 2013; Nishioka et al., 2011). The identification of breastfeeding as a potential mechanism in preventing the development of PND is significant for many mothers and infants, particularly those that are more susceptible to depressive disorders (for example mothers who have depression within their immediate family). As mentioned previously, the expression of symptoms of PND can have a ripple effect on other areas of development such as the developing attachment relationship between a mother and baby.

Breastfeeding and Attachment

Developmental literature has comprehensively demonstrated how the quality of early attachment relationships can impact developing attachment styles (Thompson, 2008). Further to this, research has illustrated the impact that individual attachment style can have on long-term outcomes such as quality of relationships, emotional regulation/understanding and self-esteem (Thompson, 2008). In addition to improvements in mood, the practice of breastfeeding exposes both mother and child to environmental and biological factors that can help to facilitate positive mother-child bonding and enhance the development of maternal sensitivity (Gribble, 2006; Weaver et al., 2018). Maternal bonding is the development of an emotional connection and caregiving relationship between mother and child and can begin during pregnancy and continue through the first year of a child's life (Lutkiewicz, Bieleninik, Cieślak & Bidzan, 2020). Maternal sensitivity refers to a mother's ability to pick up on and respond to her child's needs quickly and accurately (Weaver et al., 2018). Hunger is often the first need of the child that its mother will be responsive to and thus the child's first experience of sensitive care (Weaver et al., 2018). While strong maternal bonding can lead to increased maternal sensitivity and responsiveness, poor bonding can may negatively impact this development and thus the broader attachment relationship between mother and infant (Nordahl et al., 2020; Weaver et al., 2018). Maternal sensitivity has been linked to the development of early infant attachment security, as early and consistent recognition and response to infants' needs acts as the foundation of the developing attachment relationship between mother and child (Ainsworth, 1979; Nordahl et al., 2020; Thompson; 2008).

In qualitative studies, mothers have described breastfeeding as a time when feelings of closeness and love grow that is unlike any other time they spend with their baby (Palmér & Ericson, 2019; Schmied & Barclay, 1999). Thus, a breastfeeding practice may provide an opportunity for intimacy which in turn supports the development of maternal sensitivity.

From an experimental perspective, research has indicated that mothers who breastfeed show enhanced levels of maternal sensitivity in their interactions with their child during infancy in comparison to those who did not initiate breastfeeding and additionally, that longer duration of breastfeeding can increase maternal sensitivity (Britton et al., 2006; Tharner et al, 2012; Jonas et al., 2015; Weaver et al., 2018). At a neurological level, breastfeeding has also been found to produce increased brain activation (and thus higher levels of maternal sensitivity) in areas that are associated with caregiving behaviour for breastfeeding mothers when responding to their own infants needs when compared with mothers that are bottle feeding (P. Kim et al., 2011)

Britton et al.'s (2006) study aimed to find out if an association was present between breastfeeding, maternal sensitivity and the development of a secure mother-infant attachment in their sample of 152 mother-infant dyads. Results showed that breastfeeding mothers demonstrated greater maternal sensitivity in their interactions with their infant at 3 months when compared with mothers who were bottle-feeding. Expanding on these findings, breastfeeding literature has also indicated that increased duration of breastfeeding can play a protective role in the development of a secure attachment relationship. For example, Tharner et al. (2012) found that longer breast-feeding duration was associated with greater maternal sensitivity and more infants classified as securely attached than those that breastfed for shorter durations or did not breastfeed at all. Further to this, Weaver et al (2018) in their longitudinal examination of the effects of breastfeeding on maternal sensitivity over time, found that longer duration of breastfeeding predicted increased maternal sensitivity even when family and maternal history/characteristics were accounted for. Additionally, results of this study showed that this outcome held true over time, showing that increased maternal sensitivity in women who breastfed for longer was still apparent when the child reached age 11. In regard to the attachment relationship, Weaver et al.'s (2018) study, found that

breastfeeding duration not only increased maternal sensitivity over time it also predicted secure attachment in toddlerhood.

The research discussed above points to the positive impacts that breastfeeding (particularly for an extended duration) can have on maternal bonding and the development of maternal sensitivity (Jonas et al., 2015; Tharner et al, 2012; Weaver et al., 2018). However, it is important to note that this does not suggest that mothers who do not breastfeed do not bond with their child and develop maternal sensitivity, that children who are not breastfeed will not develop a secure attachment style, nor that fathers will not develop a high level of parental sensitivity and attachment. There is a plethora of factors that are associated with the development of a securely attached relationship between a mother and her child (such as quality of interaction) and feeding styles is but one factor among many. Therefore, what is suggested by the literature discussed in this section is that breastfeeding (particularly for extended durations) is a primary mechanism early in development by which maternal sensitivity and secure attachment can be promoted and enhanced. This is particularly relevant in cases where there are greater biological and environmental risk factors for the development of an unhealthy attachment relationship such as unhealthy maternal attachment style or in cases of adoption (Akman et al., 2008; Gribble, 2006).

Breastfeeding Internationally and in New Zealand (NZ)

Despite the well-researched and evidenced benefits of breastfeeding for infant and maternal health and wellbeing, rates for exclusive and any breastfeeding in both NZ and other developed countries remains low. In 2008, the Ministry of Health (MOH), following on from recommendations from the WHO, created the National Breastfeeding Advisory Committee of New Zealand (NBACNZ) who developed a strategic action plan in order to increase breastfeeding rates in NZ (NBACNZ, 2009). The breastfeeding recommendations outlined in

the strategy are mostly aligned with those set out by the WHO in regard to initiation and exclusivity of breastfeeding but differ slightly in the recommendations of overall duration of breastfeeding (both exclusive and partial). The WHO recommends two years or longer and NZ recommendations advise 12 months or longer (NBACNZ, 2009). The current worldwide target outlined by the WHO and UNICEF for EBF up until the recommended age of six months is 70% by 2030. However, according to 2018 data the worldwide rate of EBF to sixmonths sits at 41%, well below the 2025 target (WHO, 2018). Worldwide data also indicate that breastfeeding initiation rates, which is recommended to commence one hour after birth, fall short of the 2025 global target of 70% sitting at just 42% (WHO, 2018).

In NZ breastfeeding data collected by the MOH has indicated that for approximately 80% of babies, breastfeeding had been initiated and continued to be delivered exclusively at 2 weeks post birth (Ministry of Health, 2019). However, in spite of high initiation rates in NZ data indicates that there is a significant drop off in rates of EBF from 53% at six weeks down to approximately 22% at six months post birth, which sits well below global targets (Plunket, 2018). Breastfeeding data collected by Plunket between 2010-2015 showed that exclusive and full breastfeeding increased a small amount over this time period. However there had been no significant growth in exclusive/full breastfeeding unless combined with partial breastfeeding (Plunket 2018). Fitting with this, in 2018 Plunket/Well Child data showed that partial breastfeeding rates increased from 23% at 6 weeks to 39% at six months (Plunket, 2018).

In NZ there are demographic differences in breastfeeding rates with lower breastfeeding initiation and EBF rates seen among Māori, Pasifika and Asian ethnic groups, babies from low SES communities, and babies born to younger (under 20 years of age) mothers (MOH, 2019; Plunket, 2018). Ministry of Health data showed that only 76% of Māori babies were being breastfed at two weeks post birth compared to 8Two% of babies from Pākehā/Other

ethnic groups (MOH, 2017). Consistent with these findings, the recent study by Castro et al. (2017) (using data from the "Growing up in New Zealand" studies (GUINZ)" nationally-representative sample of 6,685 infants) found that breastfeeding initiation rates within the sample were lower for Māori (95.4%) and Pasifika (94.7%) than for Pākehā infants (97.6%). Further, rates for any breastfeeding for 6 months or longer and exclusive breastfeeding for 4 months or longer were also lower for Māori (61% & 44%) and Pasifika (64% & 49%) when compared with Pākehā mothers (71% & 62%). However, approximately 88% of births in NZ are registered with an LMC and/or Well Child provider, with Māori and Pasifika being under-represented in registrations for each. A recent report on the quality of healthcare in NZ stated that Māori experience inequitable access to appropriate supports, services and interventions that are available and generally accessed more often by NZ European mothers (Health Quality and Safety Commission NZ (HQSCNZ) 2019). Additionally, the report states that even when Māori are able to access services, they are experiencing lower quality of service for their specific needs due to systems that are not designed in a culturally appropriate way to support Māori needs. Similar findings have been reported for Pasifika in regard to inequitable access to appropriate supports and services in NZ (MOH, 2008; MOH, 2018). Therefore, NZ data on breastfeeding rates is not only incomplete, it is likely not representative of the actual population of NZ, meaning that Māori, Pasifika and younger mothers are potentially faring worse in regards to maintaining breastfeeding practice than mothers that are accessing LMC or Well child services (Glover et al., 2007).

International and NZ specific statistics show that regardless of well-established benefits of breastfeeding and ample intention to breastfeed, many mothers are not breastfeeding exclusively for recommended durations and are choosing to either partially breastfeed or not breastfeeding at all, choosing substitutes such as formula instead. In order to combat low breastfeeding rates and to support the global targets, the MOH has set their own national

breastfeeding targets for NZ and implemented national level breastfeeding promotion campaigns (MOH, 2019). Breastfeeding promotion campaigns at a global level have largely consisted of awareness campaigns that aim to educate mothers around the benefits of breastfeeding in order to encourage and increase EBF rates (Haroon et al., 2013). In NZ, breastfeeding promotion is influenced by what is occurring internationally, but tailored to meet the unique demographic differences in breastfeeding practice in the NZ context (e.g., campaigns are more targeted towards Māori and Pasifika who have the lowest breastfeeding rates). In 2008, the MOH launched a national breastfeeding promotion campaign that encouraged the public to support mothers to breastfeed for as long as possible. Alongside this campaign regional breastfeeding action plans were developed and community initiatives to support breastfeeding were created, these will be discussed in chapter two of this review.

Ultimately, low EBF rates globally have led to quantitative and qualitative investigation and examination of the breastfeeding experience in order to understand the barriers/challenges that mothers face in maintaining exclusive, or any, breastfeeding practice so that supports can be targeted and flexible to increase breastfeeding practice (WHO, 2018).

Chapter Two: Breastfeeding – ideology vs reality

Factors that influence the decision to cease exclusive breastfeeding

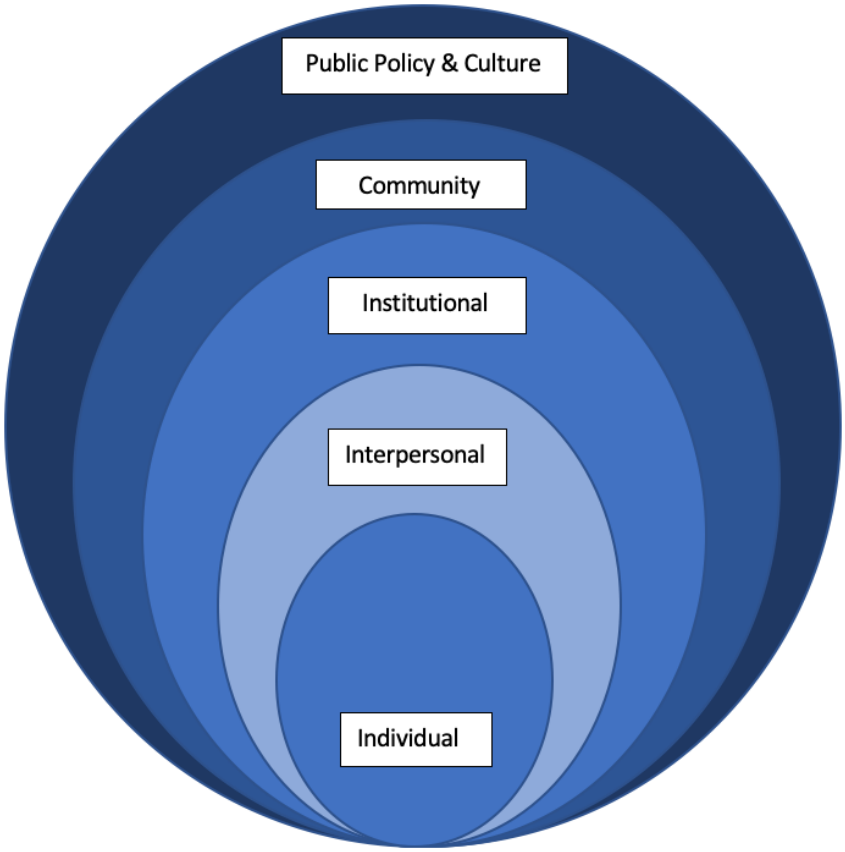
This chapter will examine the factors that influence the decision to cease or supplement exclusive breastfeeding by looking at quantitative research at the population level and qualitative research in small samples that explore the individual experience of breastfeeding. There will be a particular focus on the difficulties experienced by women when it comes to breastfeeding and the impact that this can have on maternal and infant wellbeing and attachment.

Generally, with slight cross-cultural variation, quantitative research has identified various biological, psychological, cultural, individual, social and economic factors that influence the decision to breastfeed and cease exclusive breastfeeding (Thulier & Mercer, 2009). In this section, the socio-ecological model (SEM) will be used as a framework from which to gain a theoretical perspective as to how breastfeeding decisions are influenced by complex environmental factors. The SEM framework is based on the original Bioecological conceptual model (BEM) of development as presented by Bronfenbrenner and Morris (2006). It provides a framework that allows understanding of the different processes and levels of context/environment that influence human development and human outcomes. However, the SEM was adapted from Bronfenbrenner's model by McLeroy, Bibeau, Steckler, and Glanz (1988) in order to be applied to health specific outcomes and facilitate a more comprehensive understanding of the individual factors, interactions and environmental contexts that influence health outcomes (Golden & Earp, 2012). The levels of influence include individual level factors, interpersonal interactions in a person's immediate environment, broader sociocultural settings or policies that indirectly impact the individual, and the broader cultural

environment within which the individual resides. Please see Figure 1 for a graphic depiction of the SEM model and the different levels within the model.

Figure 1

Socioecological model as described by Golden and Earp (2012).



Research has indicated that most decisions around infant feeding are made at the individual/interpersonal and intrapersonal levels of the SEM model but are also impacted (to a lesser extent) by processes in the other three levels (Thulier & Mercer, 2009, Hahn-Holbrook et al., 2012). Therefore, this section will primarily focus on individual and interpersonal level processes in the early post-partum period and only touch on processes within other levels of the model.

Individual factors that influence breastfeeding decisions

Individual (or maternal) factors play a significant role in the initiation and duration of breastfeeding and range from pre-birth factors, such as the age of the mother, her ethnicity, her education level, her breastfeeding knowledge and her socio-economic status (SES), to post-birth factors such as smoking status, birthing experience and presence of post-natal depressive symptoms (Bærug et al., 2017; Gontijo de Castro et al., 2016; Liu et al., 2013; Thulier & Mercer, 2009). A cross-sectional study by Leahy-Warren et al (2014) examined the factors that were linked with breastfeeding outcomes in a sample of Irish mothers (*n*= 1715) using self-report questionnaires to gather individual data. Findings showed that women were more likely to have breastfed if they were aged 30 plus and had a tertiary education, and further, that mothers who were at least 35 and had a tertiary education were more likely to breastfeed as long as they had planned. Researchers also found high levels of breastfeeding self-efficacy and positive attitude towards breastfeeding were independently associated with breastfeeding for planned duration (Leahy-Warren et al., 2014). Consistent with these findings are those of Haughton, Gregorino and Pérez-Escamilla (2010) and Forster, McLachlan and Lumley (2006). Both studies found a significant association between increased breastfeeding duration and higher maternal age. However, as there is very little evidence that points to difference in age and education impacting breastfeeding initiation rates this suggests that younger, less educated mothers are potentially unequally equipped to overcome issues that arise in the first days/week's post-birth.

A noteworthy finding of Forester, McLaughlin and Lumley's (2006) cross-sectional study was that being Asian was a strong positive predictor of an increased breastfeeding duration. Although the literature and statistics from developed countries consistently evidences ethnic and racial disparity in breastfeeding rates, this relationship is not as linear as ethnicity causing poor breastfeeding outcomes (Jones et al., 2011). Rather, ethnicity as a risk factor for poor

breastfeeding outcomes reflects the inequitable access to education and appropriate health and support services that many ethnic minorities groups experience in developed countries where the majority population is Caucasian (or white people of European ancestry). Further to this, there are often disparities in breastfeeding initiation and duration rates between minority groups (Jones et al., 2011; McKinney et al., 2016). Differences in rates of both initiation and duration on breastfeeding between these ethnic minority groups suggest that factors such as generational history of breastfeeding, passed down knowledge/experiences, level of forced acculturation and history of cultural oppression and trauma play a part in breastfeeding experiences.

This is relevant in the NZ context, where colonization and subsequent oppression and historical intergenerational trauma of Māori culture and people has severely impacted the social, health, cultural and economic outcomes (including breastfeeding outcomes as mentioned earlier) of Māori, creating significant inequality and inequity between them and the dominant NZ European population (Pihama et al., 2014). In regard to breastfeeding, NZ specific research has found that loss of culture, traditional knowledge and forced adaptation to the NZ European way of life and has meant that passing down knowledge and experiences between generations has been disrupted and skewed by inequitable access to available supports and education around breastfeeding practices for both Māori and Pasifika mothers (Butler et al., 2004; Glover et al., 2007; Gontijo de Castro et al., 2016). Additionally, findings of Butler et al's (2004) examination of factors associated with discontinuation of breastfeeding in NZ among Pacific participants showed that mothers who had lived in NZ for 5 years or less were more likely to breastfeed exclusively than mothers who had lived in NZ for 10 years or more. These findings indicate that longer acculturation to NZ society and movement away from traditional cultural knowledge and practice is a potential risk factor for discontinuing breastfeeding practice for Pasifika in the NZ context.

Lower socio-economic status has been evidenced to be a significant contributing factor to cessation of breastfeeding in developed countries and within the NZ context. (Butler et al., 2004; Ford et al., 1994; Gontijo de Castro et al., 2016; Jones et al., 2011) Low SES is linked with other risk factors for mothers choosing not to continue breastfeeding that have been previously discussed in this section such as lower levels of education, smoking status, becoming a mother at a younger age and minority ethnicity status (and therefore likely to be affected by social deprivation and colonization). Essentially, research has found that mothers that are older, not from a minority ethnic group, have a higher level of education, are non-smokers, are not from a low socioeconomic background, have had pre-birth breastfeeding education and are not experiencing depressive symptoms are more likely to breastfeeding for a longer duration. Many of these factors can go hand in hand, for example mothers who are older are more likely to have had post-secondary education and attend antenatal classes, better preparing them for post birth realities. These findings align with the previously outlined demographic inequalities in the NZ breastfeeding data (Ministry of Health, 2017; Plunket, 2018). To be more specific, NZ data shows that Māori and Pasifika mothers fare worse in terms of breastfeeding outcomes than NZ European mothers, likely related to the effects of colonization and greater rates of socioeconomic deprivation, such as lower post-secondary education, less likelihood of attending antenatal classes and higher rates of smoking after pregnancy.

Also fitting into the individual level of the SEM model are psychological factors such as unrealistic expectations of breastfeeding practice and physiological factors such as the physical pain that can come with breastfeeding practice and perceptions/experience of insufficient breastmilk. Breastfeeding is commonly described in qualitative research as one of the most difficult experiences of a women's life (Kronborg et al., 2015). However, the western social-cultural portrayal of breastfeeding as natural, innate and the "norm" often

means that new mothers in particular have preconceived ideas and expectations of how breastfeeding should proceed. Breastfeeding as a practice is a learned behaviour and generally not as straightforward nor as innate as most new mothers anticipate it to be (Hinsliff-Smith et al., 2014). Qualitative research has suggested that for many first-time mothers who planned to breastfeed, their experience was not what they had expected and further that they felt they were ill prepared for the realities of breastfeeding (Hinsliff-Smith et al., 2014; Schmied & Barclay, 1999). Further to this, respective studies have found that a mismatch between pre-birth expectations and post-birth realities of breastfeeding can have a negative impact on the breastfeeding experience of participants (Hauck YL & Irurita VF, 2003; Hinsliff-Smith et al., 2014; Kronborg et al., 2015). In contrast to these findings (though conceptually identical) is the idea that some mothers can have expectations that breastfeeding will be difficult or will not work out well for them and give up if things appear to get challenging, thus creating a sort of self-fulfilling prophecy (Bailey, Pain & Aarvold, 2004). Bailey, Pain & Aarvold (2004) described this as a "give it a go" culture in their examination of breastfeeding expectations and experiences among women from low-income areas who were also first-time mothers. Their findings showed that most participants had not had expectations that they would be able to successfully breastfeed but had decided to attempt it anyway. This could be interpreted as a mechanism by with these women felt they would be able to cope with failure at something they were aware could be challenging.

A key (and often unexpected) challenge that women face in their breastfeeding journey is the physical pain that often accompanies breastfeeding, such as breast tissue inflammation, cracked and raw nipples when babies are unable to latch, and blocked milk ducts, all of which make feeding incredibly challenging (Brown et al., 2014; Thulier & Mercer, 2009). Additional unexpected realities of breastfeeding as described in qualitative literature include (but are not limited to): not being able to position their baby to feed the way they were shown

in the hospital, difficulties feeding a sleepy or unsettled baby, feeling overwhelmed by infants feeding needs, physical exhaustion and insufficient breastmilk (Hauck YL & Irurita VF, 2003; Hinsliff-Smith et al., 2014; Jane A. Scott & Mostyn, 2003). Additionally, insufficient production of breastmilk is a commonly reported reason for discontinuing exclusive (or any) breastfeeding. However studies have shown that this is often a perception of mothers rather than a reality (Arora et al., 2000; Brown et al., 2014; Galipeau et al., 2017; Gatti, 2008; Schluter et al., 2006). Research has suggested that many women expect to be producing a lot of breastmilk and are surprised when only a small amount comes out of the nipple at a time (Brown et al., 2014; Galipeau et al., 2017; Hinsliff-Smith et al., 2014). This is also a factor for mothers who choose to express breastmilk and feel like they are expressing insufficient amounts (Hinsliff-Smith et al., 2014; Marshall et al., 2007). The paradox here is that early supplementation due to perception of insufficient breast milk can actually cause less breastmilk to be produced (Gatti, 2008). This is not to say that insufficient breastmilk production does not occur, as an estimated 5% of women do experience biological issues that impact their ability to produce milk (Thulier & Mercer, 2009) but rather that, due to high reporting, there is a lack of knowledge regarding normal breastmilk production. This experience, whether real or perceived, can be particularly jarring for mothers who are attempting to exclusively breastfeed if they expected breastfeeding alone would fulfil the nutritional needs of their child.

Interpersonal factors -availability of support

The support of close family members and friends, particularly the baby's father and/or spouse and the maternal grandmother, have been found to be key influences breastfeeding decisions (Kornides & Kitsantas, 2013). Research has demonstrated that fathers' opinions and attitudes towards breastfeeding can influence the decision to initiate breastfeeding and attitudes of the father towards breastfeeding is also a key factor in the continuation of, or cessation of

breastfeeding (Giugliani et al., 1994; Ingram, Johnson & Greenwood, 2002; Rempel et al., 2017; Sherriff et al., 2014). An early cross-sectional study carried out by Giugliani et al (1994) investigated the relationship between mothers and breastfeeding supports on breastfeeding practice by comparing outcomes of breastfeeding and non-breastfeeding mothers. Findings showed that a positive attitude of partners towards breastfeeding was the most significant influencing factor on positive breastfeeding outcomes with 98% of the breastfeeding group reporting that their partners viewed breastfeeding positively. Consistent with these findings are those of Ingram et al (2002), Kong and Lee (2004) and Wang, Guendelman, Harley and Ezkenazi (2018). These studies all found that participants whose partners had positive attitude towards, and perception of breastfeeding were more likely to initiate breastfeeding and were at a lower risk of ceasing breastfeeding.

Input and support from fathers or partners has been evidenced by qualitative research as a strong source of practical and emotional support for mothers in overcoming breastfeeding challenges and persisting with the practices for extended durations (Nickerson et al., 2012; Rempel & Rempel, 2011; Sherriff et al., 2014; Tohotoa et al., 2009). Participants from these studies described the support they had from their partner as playing an essential role in their breastfeeding experience and stated that they did not believe they would have had the same outcomes without the additional encouragement and practical support they received. Interestingly, and also in line with these findings, a body of research on breastfeeding interventions for fathers has found positive outcomes for interventions either specifically for, or inclusive of fathers that seek to provide them with pre-birth breastfeeding education and/or post-birth support for breastfeeding (Abbass-Dick et al., 2019; Maycock et al., 2013; Özlüses & Çelebioglu, 2014; Pisacane et al., 2005; Tadesse et al., 2018). The overall findings here suggest that having a spouse or partner offer emotional and practical support is a protective factor, not only for deciding to initiate breastfeeding but also in increasing breastfeeding

duration. This is fitting with findings discussed previously that show a relationship between marital status of mothers and breastfeeding outcomes, in that generally mothers who are either married to, or in a relationship with the father of the infant, are more likely to initiate and breastfeed for a longer duration than those who are single.

Another influence on breastfeeding outcomes at the interpersonal level is the level of support given by the maternal and paternal grandmothers and further to this the breastfeeding experience and knowledge that the maternal grandmother passes on to her daughter (Cisco, 2017; Negin et al., 2016). However, this relationship has been found to have both positive and negative associations with breastfeeding initiation and duration. In terms of positive associations, the involvement and support from grandmothers who have positive attitudes towards breastfeeding, are able to provide support and have their own positive experience with breastfeeding has been found to positively influence both initiation and duration of breastfeeding (Alianmoghaddam et al., 2018a; Angelo et al., 2020, Chen et al., 2011; Dashti et al., 2014; Lee et al., 2018). Conversely, research has also indicated that grandmothers, who are a primary influence in their daughter or daughter in laws lives also have the potential to influence breastfeeding negatively through differing opinions (generational and cultural), their own negative experiences with breastfeeding and preference for formula, which in turn influence the decisions made around feeding practices (Angelo et al., 2020; Bernie, 2013; Ferreira et al., 2018; S. Lee et al., 2018).

Consistent with this is a recent qualitative study conducted in NZ by Alianmoghaddam et al (2018) who sought to investigate how familial support influences breastfeeding by examining the impact of family culture on breastfeeding practices of 30 women. One of the themes identified in the findings of this study was the positive influence of the maternal grandmother, with participants who exclusively breastfed for the longest durations acknowledging the advice, support and experience of their own mother as an encouraging

factor in their own breastfeeding journey. Further to this, four of the participants in the study (all of whom exclusively breastfeed for between five-six months) identified that their mothers sharing of their successful breastfeeding practice and favourable perception of breastfeeding was a key factor in them maintaining breastfeeding. However, other participants identified that because their mothers and other female family members had not had positive experiences with breastfeeding, their negative attitude towards breastfeeding and their advice discouraged their continuation of breastfeeding. There has also been some evidence as to the influence of close peers on breastfeeding decisions and outcomes (A. J. Cameron et al., 2010; Kornides & Kitsantas, 2013). In essence, the influence of significant others at the interpersonal level, particularly spouses and grandmothers, in the early post-partum period can be highly impactful on the breastfeeding decisions and outcomes for mothers of new-borns.

Institutional & Community influences

At the community level of influence on early breastfeeding practices are the attitudes and social norms around breastfeeding that exist within the social structure of the community that mothers and infants reside in, which aid in supporting or discouraging breastfeeding. The lack of normalization of breastfeeding in public, over sexualization of the breast and the issues that still exist when it comes to mothers being able to breastfeed in public are examples of negative attitudes of the wider community towards breastfeeding that can influence early breastfeeding practices. Western society is not generally geared towards compatibility between social and environmental demands of everyday life and the demands of breastfeeding exclusively (Amir, 2014). Research has indicated that many women, particularly first-time mothers lack the confidence to breastfeed in public and further are embarrassed by the idea of having to do so due to perceiving the behaviour as inappropriate in many public environments (Acker, 2009; Boyer, 2018; Grant, 2016; Hinsliff-Smith et al., 2014; Jane A. Scott & Mostyn, 2003). This perception has likely been influenced by mixed

attitudes to breastfeeding in public with research suggesting that the practice of breastfeeding is still considered something that should be performed in private rather than in public (Acker, 2009; Magnusson et al., 2017; Mulready-Ward & Hackett, 2014). The potential to encounter negative reactions from individuals when breastfeeding in public has the potential to compound and intensify breastfeeding challenges in the first few weeks and ultimately deter mothers from breastfeeding due to the need to be able to do so in public to some extent.

At the community and institutional level of influence on breastfeeding maintenance and cessation is access to (community) and availability of appropriate professional and group supports (institutional). To be more specific, mothers who live in sizeable urban areas (particularly in developed nations) have increased access to professional and group supports and are not hindered by geographic location or physical isolation (e.g. living rurally) (Flood, 2017; Johnson et al., 2017). The support of appropriate health professionals is paramount when challenges with breastfeeding begin to occur once the mother leaves hospital care, especially if they are not able to be supported by other interpersonal relationships. Delivery of such services, including maternity care, can become challenging when women live large distances away from urban areas. In NZ, 34.7% of the population live in small urban areas or rurally whereas most health services are located in larger urban areas that are more densely populated (National Health Committee, 2010; Environmental Health Indicators NZ, 2018). Therefore, access to health and support services, including breastfeeding support in more rural areas is largely dependent on the existence of service delivery with those areas or the ability to be able to travel moderate to large distances to access services located in urban areas (National Health Committee, 2010). With increased use of alternative methods of delivering breastfeeding and other health related services to women living in more remote rural areas (such as telehealth and videoconferencing) some of these barriers to accessing

appropriate support services may, in time, become less challenging for mothers with new-borns (Macnab et al., 2012).

In essence, as evidenced in this section, there can be many factors that play a part in a woman's decision to exclusively breastfeed and also in her decision to move to partial breastfeeding or cease breastfeeding entirely. These factors do often not occur in isolation, in fact many women's decisions are multi-factorial in nature and extremely complex. The decision to cease breastfeeding is often not one made lightly and can often have a negative impact on a woman's psycho-emotional wellbeing.

When Breastfeeding Doesn't Go Well – The Impact on Wellbeing

Although the practice and knowledge of breastfeeding differ across cultures it has become synonymous with the sociocultural construction of the mother/caregiver identity and what it means to be a "good mother" (Marshall et al., 2007). In other words, breastfeeding has more social, cultural and emotional meaning attached to it for many women over and above simply providing essential nutrients to their child. New mothers particularly are in the process of merging their identity as a woman and their new identity as a mother and are exposed to a wide range of advice and influence (e.g. family, social circle, professionals) as to what this should look like which can be conflicting and confusing. Qualitative literature has suggested that mothers often feel that they receive conflicting advice, particularly while they are in hospital care, from professionals about how to breastfeed and that this can place doubt in their mind about breastfeeding decisions once they leave hospital care (Hall & Hauck, 2007; Kronborg et al., 2015; McInnes & Chambers, 2008). This often happens when professionals, although well intentioned, have their own views on breastfeeding practice that do not line up with the views of other professionals. This can be stressful for new mothers and which can impact their long-term breastfeeding experiences and decisions (Hall & Hauck, 2007). In

Simmons (2002) qualitative exploration of conflicting and inconsistent breastfeeding advice it was concluded that breastfeeding remains a subjective experience and that this can influence the delivery of information based on personal experience rather than only on evidence and professional training.

A qualitative study examining the relationship between breastfeeding and the developing mother identity by Marshall, Godfrey and Renfrew (2007) found that most of their participants largely attributed their early confidence as a good mother with their baby doing well in measurable aspects of health such as weight gain and mood, which they in turn attributed to the how well fed and nourished they were. Therefore, when breastfed babies did not progress well in this regard (i.e., were unsettled or not gaining weight) women in this study blamed their "bad mothering" or inability to provide nourishment. The idea of women needing to prove that they are a "good mother" by being able to provide their babies with adequate nourishment is a complex one in a society that perceives formula to be a "risky" alternative to breastmilk. This is especially true for mothers that for one reason or another have not been able to initiate breastfeeding or continue breastfeeding. Ludlow et al's (2012) qualitative study examined how mothers that had switched to formula defined themselves as "good mothers" in a society that heavily recommends and promotes breastfeeding. Discourse analysis showed that mothers that switched to formula felt like they had to constantly defend their decision to do so in order to maintain their identity as a "good mother". This is consistent with other literature in that mothers who formula feed their babies often feel as though they constantly need to defend their decisions and that they often struggle to view themselves positively in their maternal role due to perceived judgement for their decisions (Knaak SJ, 2010; Lee EJ, 2008).

Qualitative research in examining the relationship between infant feeding and the developing female identity as a mother often discusses the comparable ideologies of "intensive

mothering" and "risk adverse mothering" as playing a part in the widely accepted views of "being a good mother" that breastfeeding is so tightly tethered to (Knaak, 2010; Kuswara et al., 2020; Lee, 2008). Intensive mothering is "child-centred" (or focused solely on the needs of the child) and a form of mothering in which the mother is expected to be singularly responsible for meeting all of the needs of their child and also for the short and long term outcomes of the child in multiple domains (e.g., physical health, cognitive ability and social skills) (Afflerback et al., 2013). Closely linked with the intensive mothering ideology is risk averse mothering in which mothers are expected to make decisions for their children that minimize possible risk and that to do this effectively requires mothers to follow expert guidance (Afflerback et al., 2013; Lee, 2008). Intensive and risk adverse mothering are considered the ideal child rearing style in order to achieve what is considered the best chance of successful outcomes. Breastfeeding fits with the ideals of intensive and risk adverse mothering and can be a reinforcer the "good mother" identify. However, difficulty breastfeeding can take an emotional and psychological toll and induce feelings of failure, distress and guilt that can have a negative impact on this "good mother" identity development and overall wellbeing (Andrew & Harvey, 2011b; Hinsliff-Smith et al., 2014; Marshall et al., 2007).

The role of sole provider of nutrition and nourishment for an infant has been described by mothers as an immense responsibility that often comes with fear of failing to provide for their child (Phillips, 2011). Feelings of guilt, failure and extreme distress are commonly reported in Western qualitative research that has endeavoured to explore the experiences of women who have had to, for one reason or another, give up breastfeeding (Hinsliff-Smith et al., 2014; Larsen & Kronborg, 2013; Palmér & Ericson, 2019; Scott & Colin, 2002). Hinsliff-Smith et al (2014) identified "maternal guilt" as a major theme in discourse data collected to examine early post-partum breastfeeding experiences. For participants that decided to cease

breastfeeding feelings of guilt, defeat and failure at not being able to meet the needs of their child were reported (Hinsliff-Smith et al, 2014). This is consistent with the findings of Palmér and Ericson (2019) who examined the 12 month breastfeeding experience of participants whose child was born pre-term (under 37 weeks). The researchers argued that the breastfeeding experience of mothers of pre-term infants was not well examined within the research considering that mothers in this situation are more vulnerable in regard to having issues with breastfeeding due to fragility of the baby in terms of health and therefore potentially miss out on an important bonding experience. For participants whose breastfeeding experience was smooth, breastfeeding was a mechanism for bonding with their child and that they felt increased intimacy and closeness with their baby during breastfeeding. Conversely, participants experienced feelings of frustration when breastfeeding was not going well and then feelings of failure and guilt when they had to stop breastfeeding.

For some women, the experience of early breastfeeding difficulties and the associated feelings of guilt/failure can be triggering of depressive mood and high anxiety and has been linked to the development of post-natal depression (Brown et al., 2016; Watkins et al, 2011). Watkins, Meltzer-Brody, Zolnoun & Stuebe (2011) in their examination of the relationship between early breastfeeding experience and post-partum depression found that in particular the experience of physical pain or reported "disliking breastfeeding" was significantly associated with the development of post-natal depression. Therefore, although successful breastfeeding has been previously identified as a protective factor in the development of PND, the early challenges of breastfeeding and not being able to breastfeed as planned can put mothers can act increased risk of PND. As previously discussed, low mood and high distress can negatively impact the way that mothers interact with their baby and further can also negatively impact the formation of a secure attachment relationship between mother and infant. Additionally, to this, as previously discussed successful, early breastfeeding can act as

a protective factor for the development of secure attachment due to the unique opportunity for intimate contact between mother and infant and the caregiving (need responsive) nature of the behaviour. For mothers who have faced early breastfeeding challenges there is risk that the development of a positive attachment relationship may be disrupted or delayed due to the distress that they are experiencing (Kronborg et al., 2015; Larsen & Kronborg, 2013)

Chapter Three: Promoting and Protecting Breastfeeding

The last section of the literature review section of this thesis will examine and discuss the international and local responses to low-breastfeeding rates in terms of supports both aimed at supporting women to overcome breastfeeding difficulties and persevere with breastfeeding and the impact these supports have had in improving the breastfeeding experience will be critically discussed and examined. Lastly, the Waitaha Primary Health (WPH) Baby Feeding Service (BFS), as the intervention being examined in this thesis, will be described in detail to give context to the current research.

Response to low rates of Breastfeeding (Internationally and in NZ)

Due to the multitude of short and long-term benefits of breast feeding and the risks associated with not breastfeeding for extended durations, low breastfeeding rates are considered a global public health issue. Worldwide response to low breastfeeding rates has consisted of public health campaigns aimed at normalizing breastfeeding practice and increasing public knowledge of benefits of breastfeeding, initiatives aimed at increasing breastfeeding initiation and maintaining breastfeeding practice and specialised professional one-on-one breastfeeding support and group-based or individual peer support (Britton et al., 2007; Haroon et al., 2013; Pérez-Escamilla et al., 2016). Public health campaigns to normalize, encourage and bolster rates of breastfeeding often prescribe the "breast is best" mantra in order to achieve these outcomes (Brown, 2016). This message however has been found to often have a converse effect on new mothers that experience breastfeeding difficulties and feel that they cannot live up to societal expectations of exclusively breastfeeding (Brown, 2016).

The Baby Friendly Hospital Initiative

The Baby Friendly Hospital Initiative (BFHI) was launched by the WHO in 1991 in an attempt to increase breastfeeding initiation and promote the maintenance of breastfeeding practice. The BFHI has become a globally recognised standard for maternity/new-born care and since its creation 150 countries worldwide have implemented the initiative. Under this initiative "Ten Steps to Successful Breastfeeding" (see Figure 3) were created as a tool for hospitals and other maternity/new-born care facilities to use in order to establish an environment that was is conducive to promoting and enabling breastfeeding and ultimately increasing breastfeeding rates.

Critical management procedures	
1.	a. Comply fully with the *International Code of Marketing of Breastmilk Substitutes* and relevant WHO resolutions. b. Have a written infant feeding policy that is routinely communicated to staff and parents. c. Establish ongoing monitoring and data management systems.
2.	Ensure that staff have sufficient knowledge, competence and skills to support breastfeeding
Key clinical practices	
3.	Discuss the importance & management of breastfeeding with pregnant women and their families.
4.	Facilitate immediate and uninterrupted skin-to-skin contact & support mothers to initiate breastfeeding as soon as possible after birth
5.	Support mothers to initiate and maintain breastfeeding & manage common difficulties
6.	Do not provide breastfed newborns any food or fluids other than. Breastmilk, unless medically initiated
7.	Enable mothers and their infants to remain together and to practice rooming-in 25 hours a day
8.	Support mothers to recognise and respond to their infant's cues for feeding
9.	Counsel mothers on the use and risks of feeding bottles, teats and pacifiers
10.	Coordinate discharge so that parents and their infants have timely access to ongoing support/care

Table 1: *The 10 Steps to Successful Breastfeeding revised from* (WHO, 2021)

The implementation of the BFHI in NZ at a national level ultimately began when the New Zealand Breastfeeding Authority (NZBA) was established in the mid-nineties following several failed attempts at making NZ "baby friendly" by independent community groups, organisations and practitioners (Martis & Stufkens, 2013). In 2000 the NZBA was formally

recognised and given funding to establish a program that would allow hospitals to become accredited as a baby friendly facility which saw the number of baby friendly facilities in NZ from zero in 2000 to 74 (out of 77) in 2011 (Martis & Stufkens, 2013). Literature examining the impact of the BFHI on breastfeeding practices has largely evidenced that successful implementation of the ten steps has a positive effect on breastfeeding initiation, exclusivity and any breastfeeding rates at a global level (Howe-Heyman & Lutenbacher, 2016; Michael S. Kramer et al., 2001; Martens, 2012; Patterson et al., 2018). In additon to this, a larger effect of the BFHI has been found among mothers with lower socioeconomic background and lower education (M. L. G. Braun et al., 2003; Hawkins et al., 2015) suggesting that the BFHI can be a protective factor for mothers that are most at risk of early cessation of breastfeeding. Additonally, there have been some observational studies that have suggested a dose response relationship between exposure each of the ten steps and duration of breastfeeding and further that exposure to certain steps is essential in order to achieve long-term breatfeeding maintenance (Nickel et al., 2013; Olaiya et al., 2016; Pérez-Escamilla et al., 2016; Spaeth et al., 2018). Interestingly, research has indicated that the long-term sustainbility of the gains made in baby-friendly hospitals is stronger if step ten (referral on to community support) is well-implemented by the facility (Pérez-Escamilla et al., 2016).

However, as mentioned previously, even with the introduction and adherence to the BFHI which work to enhance the baby friendly practices in maternity facilities, there still exist issues around mothers receiving conflicting information and advice from healthcare professionals due to the subjective nature of breastfeeding (Chaplin et al., 2016; Hauck et al., 2011; Reddin et al., 2007). There can be a range on professionals involved in the breastfeeding process from the antenatal period to the post-partum, from doctors (obstetricians and GP's), midwives, nurses and lactation consultants (Dykes, 2006). Literature examining the individual experiences of professional support has found that the

influence of these supports can have positive or negative outcomes depending on whether the professional support provided consistent or conflicting advice (Ayton et al., 2019; Fox et al., 2015; Hauck et al., 2011; Whelan & Kearney, 2015). Advice that is either inconsistent with the beliefs of the individual or inconsistent with the advice of other professionals can have a negative impact on the confidence of the breastfeeding mother (Ayton et al., 2019; Hauck et al., 2011). A study by Hauck et al., (2011) examining the experience of conflicting professional advice found that participants were able to account for at least one occasion where they received conflicting advice relating to breastfeeding. The researchers examined the factors that contribute to advice being perceived as conflicting by participants finding that a mismatch between maternal expectations of breastfeeding and the realities of breastfeeding, circumstances of the mother (e.g., if they were particularly vulnerable, a first-time mother or had an extremely unsettled infant), the approach of the professional and the amount/type of advice given. In addition to this, it was suggested that blanket statements given about breastfeeding that did not take into account the individual situation and were often interpreted as judgemental and further that the amount of information could be overwhelming for mothers, especially if it was not consistent (Hauck et al., 2011).

NZ has a unique pre/during/post pregnancy system in which Lead Maternity Carer's (LMC's) are contracted by the MOH to support women leading up to their pregnancy, during delivery and during the four-six weeks post birth (Alianmoghaddam et al., 2018). An LMC can be a midwife or a specialist doctor, however while midwives are a free service for individuals due to government funding, a specialist doctor is not publicly funded (MOH, 2019). At the end of contact with the LMC, the mothers care is then transferred back to her GP and the infants care to a well-child provider such as Plunket (Alianmoghaddam et al., 2018). This system aims to provide increased continuity of care for mothers and increase positive health and wellbeing outcomes for the mother/infant dyad in both the short and long-term. Therefore, if

the LMC is unable to provide support for specific/complex breastfeeding issues there is a reliance on post-discharge, community-based services and resources to be available to new mothers to support them with their breastfeeding journey. As mentioned previously, in NZ EBF (and any breastfeeding) usually starts to decline during the first week's post birth (Plunket, 2018). This indicates the need for breastfeeding related intervention to occur early, be maintained/available for extended periods and be holistic in delivery style. Due to the complexity of the individual experience of breastfeeding, support services should aim to encourage realistic rather than idealistic outcomes, which does often not line up with health targets (Alianmoghaddam et al., 2018).

International Board-Certified Lactation Consultants (IBCLC)

In NZ, community-based specialist breastfeeding support largely consists of lactation consultant (LC) support that is either government funded or a private service depending on which region one lives in. A LC can be defined as an individual that specialises in provided clinical breastfeeding management support and is registered as an International Board-Certified Lactation Consultant (IBCLC) which is the single globally recognised lactation consultation certification (Noel-Wiess et al., 2012). Internationally, the rise of the IBCLC profession occurred in the 70's and 80's as a solution to the increasing needs from mothers for specialised breastfeeding support and advice (The International Board of Lactation Consultant Examiners (IBLCE), 2017). IBCLC's can and do work in a variety of settings, from hospitals and maternity care facilities to community-based public or private services. IBCLC's often have a background in other health professions such as nursing or midwifery but to register as a IBCLC they must have/complete substantial clinical experience working with mothers that are breastfeeding, acquire lactation education credits and complete the IBCLC examination (Thurman & Allen, 2008). As a profession, lactation consultation straddles the line between medical professionalism in promoting breastfeeding and maternal

centred care where on one hand there is expectations of meeting global recommendation in regards to breastfeeding outcomes, but on the other supporting the personal goals that mothers have around breastfeeding and thus the decisions they make that may not meet expectations around exclusivity and duration (Carroll & Reiger, 2005). The specific knowledge set of IBCLC's makes them able to assist mothers with finding specific causes of breastfeeding issues and provide treatment/intervention while also directing typical breastfeeding management (Carroll & Reiger, 2005).

Results from both quantitative and qualitative studies have pointed to the effectiveness of lactation consultant support in increasing duration of breastfeeding (S. L. Cameron et al., 2015; Chetwynd et al., 2019; Dweck et al., 2008; Haase et al., 2019; McKeever et al., 2002; Patel & Patel, 2016; Su et al., 2007; van Dellen et al., 2019). Su et al's (2007) RCT examined the effectiveness of antenatal education and postnatal support strategies on a large sample of 450 Singaporean mothers that experienced uncomplicated pregnancies. Results showed that participants allocated to postnatal IBCLC intervention were more likely to be breastfeeding exclusively at all time points when compared to the control group. These results are consistent with the findings of Bonuck et al's (2014), Cameron et al's (2015) and Morris and Gutowski's (2015) studies that each examined the impact of primary care breastfeeding interventions utilizing lactation consultant support on breastfeeding outcomes and found that interventions that included post-natal IBCLC engagement increased duration of exclusive and any breastfeeding when compared with control groups. More recently Dellen, Wisse, Mobach and Dijkstra (2019) assessed a breastfeeding intervention offered by an insurance company in the Netherlands using a quasi-experimental design. The Breastfeeding support program (BSP) is an evidence-based intervention which combines breastfeeding education and support through pregnancy and postnatally through six visits with an IBCLC. Findings showed that at post-test participants in the BSP had higher rates of any and exclusive breastfeeding than the

control group and that these findings held true even when baseline group differences were controlled for.

These studies describe examination of supports/interventions that begin antenatally and continue post-birth on breastfeeding outcomes. Quantitative literature that discusses the impact of LC support/contact for mothers who are having postnatal breastfeeding issues/are actively seeking lactation support on breastfeeding practice and the underlying psychological and emotional wellbeing of the mother and infant is an under-researched area. Quantitative examination of breastfeeding interventions and more specifically LC/professional support is focused on outcomes which although necessary aspects of intervention research do not inform in detail in regard to how outcomes were reached. Therefore, to gain a comprehensive understanding of the how IBCLC support can impact breastfeeding and maternal/infant wellbeing and what aspects of this type of support mothers find value in, qualitative literature and the individual experience of IBCLC support and must also be examined.

Qualitative research examining the breastfeeding experience has identified that mothers receiving professional support value support that is personalised, empathetic, non-judgmental and responsive to mothers needs rather than prescriptive and inconsiderate of individual situations and needs (James et al., 2020; Kronborg et al., 2015; Lamontagne et al., 2008; Schmied et al., 2011). Lucchini-Raies et al's (2019) examination of perceptions of care received and provided during breastfeeding found that participants valued professionals that recognize the emotions that they are experiencing in order to establish a relationship and identify needs. Further to this, participants identified that positive dispositions in the professionals such as affectionate treatment, ability to rid participants of doubt and worry, consideration of the individuals opinions/experience and provision of specific information were all valuable in creating a trusting relationship and producing worthwhile breastfeeding outcomes (Lucchini-Raies et al., 2019). Participants reported feeling attuned to negative

attitudes and characteristics of professionals that did not provide them with adequate support reporting distant and cold treatment.

Kronborg et al's (2015) exploration of breastfeeding experiences of first-time mothers found that participants valued professional support that was both practical and decisive but that also took their specific context and situation into account when offering said support/advice. Further to this, the ability for professionals to not create doubt or worry but rather encourage and build confidence for participants was found to be valuable. Additionally, some participants indicating that off-hand comments regarding the mother's milk production caused them to doubt their ability to produce enough milk to nourish their child and that this became a constant worry. Mothers in this study also identified that too much focus and emphasis on breastfeeding from professionals created stress and pressure for mothers and that they valued support that was non-judgmental of their choice to supplement with formula when breastfeeding challenges became too unmanageable and that didn't treat formula as a taboo topic (Kronborg et al., 2015). Fitting with these findings are those reported for a meta-synthesis of qualitative research carried out by Schmied et al (2011) exploring perceptions and experiences of breastfeeding. Discourse within this study suggested that mothers placed importance in having trust and rapport with professionals and that this developed when mothers felt like the professional was available for her to access when challenge arise (whether in person or over the phone) and were empathetic and warm in the way that they communicated with mothers. Also identified within this study was the importance of professionals in taking time to listen to the mothers worries, observe feeds and offer practical and technical advice and also to allow mothers the time to formulate and ask questions without feeling pressured or hurried. Additionally, provision of reassurance and encouragement to ease mothers worries without being overly judgmental was valued.

Participants of James, Sweet and Donnellan-Fernandez's (2020) study described their interactions with an LC when they had been seeking reassurance for breastfeeding practice. Participants reported that the support given by the LC was affirming, put their worries at ease and increased their confidence that they were "doing it right" and to persevere even though they were experiencing slight pains. The study also identified that participants found practical tips and detailed information particularly helpful and encouraging in overcoming breastfeeding issues. These findings are compatible with those of Lamontagne, Hamelin and St-Pierre (2008) who conducted a mixed method descriptive study of the experiences of mothers that sought support for major breastfeeding issues at a breastfeeding clinic serviced by doctors and lactation consultants in Quebec. Participants in the study felt that contact with the clinic had helped them reach their breastfeeding goals and had aided in satisfaction with the overall breastfeeding experience. Further to this, participants reported finding value in the practical tips around technique and explanations for problems they were experiencing, and possible solutions given by the LC's.

In regard to negative experiences of professional support participants from Schmeid et al's (2011) study described participants feeling disconnected when comments were made or advice was given that, although well intentioned, had a negative effect on their confidence and wellbeing. Alongside this, the experience of feeling like some of the physical touch that was required by professionals to demonstrate practical techniques was perceived as intrusive or harsh and some participants felt like their breast was treated as just a feeding object. This rough sort of approach was perceived negatively even if the advice received was helpful (Schmied et al., 2011). This type of contact, although often necessary, would need to be considered within the lens of cultural respect and appropriateness in both NZ and many other countries where different cultures and cultural practices exist within the total population. For example, Māori tikanga has strict protocols regarding physical closeness and touch that

require full explanation of and consent to be given prior to any necessary physical contact taking place (MOH, 2004). Therefore, any physical contact that has not been explained and consented to could be perceived as culturally inappropriate, disrespectful and thus ultimately unhelpful in developing a trusting relationship between LC and Māori mothers seeking support.

In summation, literature examining the individual experience of breastfeeding support by both LC's and other health professionals indicates that although knowledge and professionalism is valued in supporting breastfeeding women the success of these encounters appears to be somewhat reliant on the manner of the professional. In other words, less formalised characteristics of the professional such as ability to build trust, empathy, warmth, listening and advising without judgement, taking individual context into account and giving practical advice that meets mothers' personal goals are seen as valuable in facilitating positive support experiences for women experiencing breastfeeding issues.

Breastfeeding Peer Support

Breastfeeding peer-support has a long official history originating in the USA with the La Leche League (LLL) in 1956 (Rossman, 2007). The concept behind the initiative was to create groups where mothers who had experience with breastfeeding could support and provide information to other mothers that were beginning their breastfeeding journey or facing difficulties. The ultimate goal was to reinvigorate women to women (or mother to mother) support in early childrearing that had appeared to no longer occur (NZ History, 2019). The LLLI groups found their way to NZ in the early 1960's and the Le Leche League NZ (LLLNZ) is now recognised as a national organisation that provides training to volunteer mothers to provide peer-support via its Breastfeeding Peer Counsellor Programme (PCP) (NZ History, 2019). Other peer support initiatives based on the LLLNZ PCP model have since

been developed to meet the specific needs of different regions in NZ. An example of this is the Mother 4 Mother (M4M) peer support groups in Canterbury and the West Coast, which were established by two Primary Health Organisations to serve the needs of more isolated rural communities. M4M utilize the LLLNZ training to train volunteers' leaders in smaller rural locations to facilitate groups of mothers in overcoming their breastfeeding difficulties (Johnson et al., 2017).

As with professional breastfeeding support, research examining the effectiveness and impact of peer-support groups has been conducted over the past 30 years with quantitative findings being mixed in terms of the direct effect of peer support on breastfeeding rates (Arlotti et al., 1998; Chapman et al., 2010; Chetwynd et al., 2019; Dennis, 2002; Ingram et al., 2005; Jolly et al., 2012; Muirhead et al., 2006; S. Scott et al., 2017; Srinivas et al., 2015). Although there has been no inference in the literature of peer-support having a negative impact on breastfeeding, there has been some debate as to the strength of the impact/effect of the intervention in nations/areas of higher-income and less socioeconomic deprivation. An example of this argument is demonstrated in the systematic review carried out by Jolly et al (2012) which examined the impact of peer-support on rates of exclusive and any breastfeeding. Peer-support interventions significantly decreased the likelihood of not breastfeeding at all at final follow up when compared to usual care in both high-, middle- and low-income countries, although the overall effect was much higher in studies that took place in low- or middle-income countries (30% lower than usual care) than in high income countries (7% lower than usual care) (Jolly et al., 2012). Further to this, likelihood of not exclusively breastfeeding at final follow up was much lower than usual care in low and middle-income countries (37%) than high income countries (10%). Other studies have also found similar trajectories when examining the impact of peer-support in high-income countries in that although the effect of peer-support attendance is in a positive direction, the

strength of the effect was small and often not significant (Muirhead et al., 2006; Singh et al., 2017). In contrast to this, a review by Chapman et al (2010) found that peer-support interventions significantly improved rates of breastfeeding duration and exclusivity even in high income countries such as the United States and the United Kingdom. However, five of the seven studies included in this review were carried out in areas of low SES which may have had an impact on the effectiveness of the studies due to higher deprivation in the areas being examined.

There is the potential that peer-support interventions that are reactive rather than proactive may have a decreased likelihood of success in high-income countries in regard to impacting breastfeeding rates. Unfortunately, there are currently no NZ based studies that examine the impact of peer-support on mothers seeking breastfeeding support. However, in a high-income country such as NZ (where most of the population have access to ongoing support post hospital discharge in the form of LMC's) it is possible that peer-support as a singular intervention is potentially not as impactful in terms of increasing duration and exclusivity of breastfeeding for women experiencing moderate to severe breastfeeding issues once they have been discharged from their LMC (or if their LMC has been unable to provide adequate breastfeeding support). A study by Lee, Chang and Chang (2019) examined the impact of an IBCLC organized and led education and peer-support groups on breastfeeding rates and breastfeeding self-efficacy at one week and five-six weeks post-partum in Taiwan. Findings showed that the breastfeeding-self efficacy of both groups had significantly increased between the first and second support group visit for both the intervention and control group however the self-efficacy levels of the intervention group were significantly higher when compared to the control group. This study gives an example of how the peer-support groups can be combined with professional support so that mothers have the benefits of both types of breastfeeding support.

Overall, qualitative literature reviewed provides evidence for the positive perception of and experience with peer-support for mothers who have had contact with one-on-one or group support and further, that the benefits of peer-support go beyond those relating to specifically to breastfeeding to wider psychological and emotional wellbeing benefits (Burns et al., 2020; Nankunda et al., 2010; Quinn et al., 2019; Rossman, 2007; Scott & Mostyn, 2003; Wade et al., 2009; Youens et al., 2014). In 2009, the National Childbirth Trust (Muller et al., 2019) released a document outlining their process and results of a three-year pilot project to train 240 peer-supporters that would run breastfeeding peer-support groups in different areas across England. Closed questions in the survey's collected showed that mothers had found that their peer-supporters were good listeners and that contact with them had increased their confidence about breastfeeding. Open-ended questions indicated that the welcoming environments of the groups and the friendly nature of supporters was a significant factor in their positive experience. Further to this, focus group participants reported feeling that being among peers enabled them to ask questions that they felt would seem silly to ask a health professional but that they felt comfortable doing so in the peer-support group environment with women that were going through the same things. The participants reported feeling that the support offered by the peer-supporter had been valuable in regard to treating and normalizing her individual breastfeeding difficulties (Muller et al., 2019).

These findings are similar to the findings of Scott and Mostyn, (2003),Quinn et al., (2019) and Burns et al (2020) whose studies each qualitatively explored mothers perceptions, experiences and impact of various forms of breastfeeding peer-support. In Scott and Mostyn's (2003) study, participants reported valuing having someone available to them that could relate to their experiences and encourage them in their breastfeeding journey. Quinn et al's (2019) exploration of breastfeeding support groups across Ireland found that mothers also valued the increased opportunity for social connection with other mothers and felt that

being around other mothers normalized their breastfeeding experiences and created a space where they felt safe to discuss issues and even offer other mothers support and advice. Burns et al (2020) gives additional support to these findings in their examination of mother's experiences of a peer-support drop-in service based in Australia. Respondents identified the enabling environment of the peer-support groups as a key factor in them continuing their breastfeeding journey, in that they felt that their issues were taken seriously, and emotional and practical help was provided. The experience of in person connection also seemed to impact the participants social-emotional and psychological wellbeing in that being able to connect with other mothers having similar experiences increased their own emotional state (Burns et al., 2020).

The additional benefits of breastfeeding peer support, such as wellbeing as described above, have been explored by Wade, Haining and Day (2009) who used focus group's made up of a total of 16 women who had received breastfeeding peer-support in order to gather data. Themes that emerged on analysis were enhanced mental health, increased confidence/self-esteem, parenting skills and (interestingly) improved family diet, breastfeeding sustainability and (although unrelated to peer-support experience) poor hospital experience. In relation to improved mental health, several participants attributed contact with peer-support as keeping them from developing depression, describing peer-support as "keeping them sane'. Additionally, women described the impact peer-support groups had on their confidence in terms of enabling them to become more confident about their breastfeeding and in turn other parenting decisions.

For mothers who are seeking breastfeeding support via peer-support groups or one-on-one peer support, much like the experience with IBCLC's, it is evident that the environment and they characteristics of the peer support group and the peer-supporters themselves have a large impact on not the individual experience of peer support. Breastfeeding mothers, particularly

those that are experiencing issues with breastfeeding, are a particularly vulnerable group in terms of the stance or approach of supporters. They require empathy, respect, patience, communication and to feel like they can trust the peer-supporters they are seeking information and support from and the group of other mothers they are sharing the experiences with. Therefore, although knowledge and usefulness of advice has been identified as a key element of positive peer and professional support, the *way* in which said information and advice is delivered appears to be an essential element of successful intervention. Additionally, peer and professional support can have positive impact on breastfeeding confidence and overall wellbeing by being a non-judgmental, encouraging and safe environment for women experiencing issues with breastfeeding, whether they be first time mothers or not.

Waitaha Primary Health – Baby Feeding Service

There are a number of activities/services in NZ, based in both primary and secondary care, that aim to support breastfeeding mothers and increase regional EBF rates and to help meet national targets. One of these regional supports, and the focus of this research proposal, is the Baby Feeding Service (BFS), a free service provided by Waitaha Primary Health (WPH; formerly Rural Canterbury Primary Health Organisation (RCPHO) that assists mothers in overcoming specific and often complex breastfeeding issues while encouraging and supporting women to continue breastfeeding. Waitaha Primary Health is a Canterbury based primary health organisation that provides and supports health services in Canterbury's urban and rural communities. The BFS is a two-pronged service that consists of Community LCs and Mother for Mother (M4M) peer support groups and has been active in Canterbury since 2008 as a result of the MOH's National Strategic Plan for Breastfeeding (NBACNZ, 2009).

The community LC service is delivered by two IBCLCs, who deliver a one-on-one specialist clinical service that can be delivered via a home visit or during a M4M group (which both LCs regularly attend) depending on the needs of the mother. Support given includes assessment and intervention of complex breastfeeding issues, antenatal or postnatal breastfeeding education, assistance with feeding plans when returning to work and overcoming physiological barriers to breastfeeding such as tongue-ties. Tongue-ties are a physiological abnormality where the bottom of the tongue is attached to the bottom of the infant's mouth making breastfeeding increasingly difficult due limited mobility of the tongue (O'Shea et al., 2017). Tongue-ties are reasonably common, occurring in 4-11% of new-born infants and intervention involves cutting the frenulum so that the tongue becomes removed from the floor of the mouth allowing more movement, a procedure that the Waitaha LCs are able to perform (O'Shea et al., 2017).

Referrals to the LC service come from multiple sources with the two main referrers being Mid Wives/LMC's and Well Child but also General Practice, Neonatal Intensive Care Unit (NICU), Hospital Midwives, Paediatrics and other community groups. Referral numbers for the service are high, with approximately 1000 mothers referred to the service each year, which makes up approximately 15-16% of live births in Canterbury per year (Statistics NZ, 2020). Due to high referral numbers, large geographic coverage and only two LCs providing the service, referrals are triaged by phone (the LCs are required to make contact with mothers within five days of receiving the referral) and allocated service provision that is appropriate for level of need/distress presented. For example, some needs may be able to be met during a phone conversation with the LCs with a recommendation to come to a M4M group if the situation doesn't change; others with higher needs be asked to meet the LCs at a group for a one-on-one appointment and if they are not able to do so (or there is no group operating close to them) then a home appointment will be made. Currently about 50% of referrals are

attended to over the phone or at a M4M group and 50% are seen during a home visit. If the LCs are seeing a mother in the home, then, if required and possible, they will suggest a follow-up at a group or recommend attending groups as a form of ongoing support.

As discussed previously, M4M peer support groups were established in Canterbury to serve the needs of more rural and lower SES communities in the region that do not have easy access supports. There are currently nine M4M Peer Support Groups operating in Canterbury (Aranui, Lyttleton, Papanui, New Brighton, Halswell, Shirley, Ashburton, Rangiora and Rolleston) that have supported around 2000 mothers since they began in 2008. Mother for mother groups are facilitated by trained volunteers, who are usually mothers that have attended the groups themselves as members. Currently there are 55 trained volunteers running the M4M groups and they are trained and supported by a Peer Support Administrator employed by WPH using the LLLNZ Peer Counsellor training manuals. The M4M groups are designed to offer women a causal, friendly environment where they can receive support for breastfeeding issues from other mothers and can improve their confidence in breastfeeding. This ethos is keeping with the environmental factors that have been identified as beneficial for mothers in previously discussed qualitative research in having a space that is informal in nature and where they feel safe to discuss issues (Burns et al., 2020; Muller et al., 2009; Quinn et al., 2019). Additionally, there are social benefits that come with being part of a group, particularly for new mothers such as sharing techniques and experience to support each other (Hoddinott et al., 2006; Wade et al., 2009).

One of the LCs will attend groups on a weekly basis (aside from Ashburton where LCs are present once a fortnight) to meet with mothers that have been referred to the LC service and a home visit was not suitable or alternatively, ‘walk-ins’ or mothers that know LCs attend the groups and are after clinical support. Therefore, although groups aren’t clinical in nature, the presence of LCs at the groups does mean that clinical needs are attended to if/when required.

The presence of the LCs at the M4M peer support groups makes them unique in comparison to other breastfeeding peer support groups in Canterbury that do not have the clinical aspect to them. This sort of approach is similar to the approach described by Lee, Chang and Chang (2019) in which IBCLC's organized and lead the support groups. However, the intervention used in this study was semi-proactive in nature, in that mothers attended initially one-week post birth where they received breastfeeding education and support in order to prevent breastfeeding issues and give mothers tools to deal with any issues that may arise. Conversely, although mothers are able to attend Waitaha peer-support groups if they are not experiencing breastfeeding issues, the BFS is largely a reactive service in that mothers are usually seeking advice on specific issues they are experiencing.

As mentioned previously, the current research will focus on the BFS provided by WPH, one of only two providers of Christchurch District Health Board (CDHB) funded, free community-based peer support groups run by trained peer support volunteers (the other provider being Te Puawaitanga Ki Otautahi Trust) and the only provider in Canterbury of a free community-based LC service in Canterbury. In 2014 small student study (Thorn, 2014) was conducted with a primary focus on the LC arm of the Waitaha Primary Health (then Rural Canterbury Primary Health Organisation) BFS and used questionnaires to examine the factors that influence the decision to breastfeed, barriers that compromise the duration of breastfeeding, reasons for cessation of breastfeeding and community supports that participants found most useful. Results showed that participants decision to breastfeed was mainly influenced by knowledge of the benefits of breastfeeding. Additionally, it found that for this population barriers to breastfeeding and factors influencing the decision to stop breastfeeding were complex but that perceived lack of milk and other physical issues were most commonly reported. In regard to usefulness of supports, the study found that LC services were ranked as most useful closely followed by M4M peer support.

Research Questions

Given the previously identified complex nature of the breastfeeding experience; the impact of problems with breast feeding on both mother/infant wellbeing and the need for effective supports; the current research will look to expand on the 2014 findings (Thorn, 2014) by conducting a more in-depth evaluation of the Waitaha's BFS. Rather than focusing on specific breastfeeding outcomes such as rates of exclusive breastfeeding, the proposed evaluation will be interested in understanding the impact that this BFS has on the individual experience of breastfeeding of mothers who have accessed the service. The research aims to answer the following key questions:

1. What were service users' perceptions and experiences of breastfeeding prior to accessing the BFS?
2. How did users' perceptions and experiences of breastfeeding of breastfeeding change after accessing the BFS?
3. How did users' interactions with the BFS contribute to any changes identified in their breastfeeding experience?
4. Did use of the BFS impact overall maternal/infant psychological wellbeing?
5. What were Māori, Pasifika and rural users' experiences of the service and were there any barriers to access for these users?

It is the expectation that answering these key research questions it will be possible to identify potential mechanisms within the service that contribute to changes in the individual experience of breastfeeding and to examine the influence the service has on overall maternal/infant psychological wellbeing.

Chapter Four: Methods

Design

The current study utilised a mixed-methods approach in order to produce rigorous collection and analysis of both process and outcome data thus strengthening the understanding of participant experience. As such, the current study is two part. Part one involved a multiple baseline across participants single case experimental design (SCED) to gather quantitative outcome data in the form of daily online surveys measuring breastfeeding difficulty, breastfeeding confidence, maternal wellbeing and mother/infant attachment. Part two consisted of a post-intervention semi-structured interview to supplement quantitative data, allow comprehensive review of process data and gather outcome and evaluation data. The semi-structured interview allowed extra experiential information to be gathered from the clients retrospectively (e.g., specifics about what aspects of the BFS were helpful/unhelpful).

Ethical Approval

Ethical approval was obtained from the New Zealand Health and Disability Ethics Committee (HDEC) (Appendix A) and was then additionally approved by the University of Canterbury Human Ethics Committee, prior to the beginning of the study. Informed consent was sought and gained from each participant prior to their participation in the study. Additionally, participants were made aware that participation in the study was voluntary and that they were able to withdraw their participation at any stage during the course of the study. Further, they were made aware that participation/non-participation did not impact their ability to access the BFS. Finally, during the course of the study approval for an amendment to the exclusion criteria for participation in the study was obtained from the HDEC (the approved amendment will be discussed in more detail in the recruitment section) (Appendix B)

Recruitment

Following ethical approval, the two LCs at Waitaha Primary Health commenced the recruitment process. Eligible participants were mothers referred to the BFS who met the inclusion criteria (according to the inclusion and exclusion criteria are presented below). Mothers identified as eligible were asked by the LCs (who managed their own triaging of clients) if they would like to receive more information about participating in a master's research study. If participants indicated they would like to receive more information, their phone numbers were passed on to the researcher and a weblink was sent to the potential participant's phone via text message that would link them to the information sheet (Appendix A), consent form (Appendix B) and first survey (Appendix C) that were all available online via Qualtrics software.

Inclusion Criteria

- Referred to the Waitaha Primary Health BFS in the period of 1st September 2020 – 1st March 2021
- Seeking support for the baby they are currently breastfeeding (this does not have to be their first baby)
- Allocated to receive a one-on-one appointment with the LC (either at the participant's home or at M4M group venue.
- Over 18 years of age
- At least one participant would be from each identified group (urban, rural, Māori and Pasifika) to ensure that sample represents (as much as possible) a culturally/geographically diverse population and also those that are in an under-represented population.

Exclusion Criteria (later amended, see below)

- Referred because their baby has been diagnosed with tongue-tie.
- Do not require a one-on-one appointment with the LC (i.e.: mothers with less complex issues that are resolved during phone conversation/consultation).
- Require urgent care (i.e., mothers who require an appointment with the LC's consultant within 24 hours of initial phone call).

In SCED, a small sample (usually a minimum of three participants) is common due to the repeated measures nature of the data collection requires (Krasny-Pacini & Evans, 2018). The current study aimed to recruit between four-eight participants. It was originally intended that purposive sampling would be used to achieve a sample was culturally diverse and representative of all the individuals that use the BFS. However, recruitment was slow and difficult due to the requirements of the baseline period (at least three surveys needed to be completed prior to the participant's appointment with the LC), the time frame within which mothers were contacted and then seen by the LC's and the appropriateness of referrals. Due to the time constraints of the research, it became unlikely that a highly representative sample would be able to be purposively selected. Additionally, due to slow recruitment, the period of recruitment was extended to conclude once the minimum number of participants required for SCED (three participants) had been successfully recruited and were providing data rather than the previously expected four-eight participants. Therefore, the end of the recruitment period was 01/03/2021.

As mentioned previously an amendment was made to the exclusion criteria in November to include mothers who were referred to the service for a tongue-tie. Initially, this was included in the exclusion criteria as an assumption was made that a tongue-tie referral did not fit with the aim of the study: examining breastfeeding experience and the impact of the BFS on this.

In other words, it was understood that a tongue-tie was not necessarily breastfeeding related but rather anatomy related. However, with increased exposure to the reasons for referral to the BFS it became evident that many referrals that include a tongue-tie reason for referral also included other breastfeeding issues that were either caused by or exacerbated by a tongue-tie in the infant. Additionally, with further research into factors influencing breastfeeding issues it also became evident that tongue-ties can be a cause of breastfeeding issues and often, unless there is intervention, can be a reason that women cease breastfeeding due to difficulty overcoming these issues. Therefore, tongue-ties are a unique aspect of the breastfeeding experience for some mothers and to exclude mother/infant dyads referred to the BFS due to a tongue-tie would potentially miss an interesting and common experience of breastfeeding.

Participants

Mothers who gave informed consent and filled out their first survey within 24 hours of receiving the Qualtrics link were initially eligible for participation. However, participant status was not confirmed until they had met the baseline requirements (i.e., filled out at least three surveys prior to their appointment with the LC). As each survey queried the breastfeeding experience of the previous 5 hours, participants were able to fill out their third survey shortly after seeing the LC and still meet baseline requirements. The final sample consisted of three participants. Following recruitment, participants were assigned pseudonyms to protect the privacy of the participants and their families. Demographic data, along with the reason for referral, were collected via referral forms to the BFS and any information gathered as part of the follow-up interview.

Measures

Ecological Momentary Assessment (EMA) - The Breastfeeding Experience Survey

Repeated measures of the daily experience of breastfeeding were gathered using an active form of real-time monitoring called EMA in which frequent (twice daily) and short (four statements). Qualtrics surveys titled the "Breastfeeding Experience Survey" (BES) were sent to participants over a six-week period. The use of daily self-report repeated measures aimed to reduce retrospective recall biases and to give a more natural account of any changes in the participants experience over short periods as it occurs in the participants' natural environment. The BES was developed using items from already validated tools in order to examine four different aspects of the breastfeeding experience and was designed to be a low effort method of data collection considering the population being studied and the long data collection period. Breastfeeding experience constructs examined were breastfeeding difficulty, breastfeeding confidence, maternal wellbeing and attachment. Each survey consisted of four statements each covering one of the four identified breastfeeding experience constructs and each statement was drawn from already well-validated questionnaires/tools (discussed below) so that there was evidence to support that they were measuring what they purported to measure. Statements were answered using rating scales, where participants were presented with a statement and asked to choose a number from one-ten that most accurately represented their experience over the past five hours. An answer of one indicated "not at all" and an answer of ten indicated "very much so" except for the statement on breastfeeding difficulty which was reverse scored. Although some of these questions (when presented in the tool they have been drawn from) used Likert scales of varying size, a ten-point scale was deemed more appropriate for consistency, participant usability and for accurate analysis of experience and any change over time. See Appendix D for the complete Breastfeeding Experience Survey used to collect quantitative breastfeeding experience data in this study.

Breastfeeding Difficulty. "Over the past five hours I have had trouble breastfeeding my baby". The statement for this construct was drawn from the Beginning Breastfeeding Survey-Cumulative (BBS-C) a questionnaire that has been found to be reliable and valid in an ethnically diverse urban population (α= 0.94) (Mulder, 2013). The BBS was designed to assess a mother's perceptions of how effectively she is breastfeeding during post-birth hospitalization by examining several different factors involved in a new mother's breastfeeding experience in order to identify any mothers having breastfeeding issues. The original version of the Beginning Breastfeeding Survey focused on a single session of breastfeeding but was revised to assess mothers experience of multiple breastfeeding sessions and was thus renamed the Beginning Breastfeeding Survey – Culminative (Mulder, 2013). Each item in the survey assesses a maternal and/or infant need and scores indicate whether the need is being met or unmet. This statement around difficulty with breastfeeding aims to assess how effectively participants are breastfeeding and meeting their infants feeding needs. This statement was used in the Breastfeeding Experience survey in the current study to track how challenging participants were finding breastfeeding over the six-week data collection period by asking them to indicate twice daily, the level of difficulty they experienced over the past five hours.

Breastfeeding Confidence. "Over the past five hours I have felt confident about breastfeeding my baby". The question for this construct was also drawn from the BBS-C described previously (Mulder, 2013). This statement aims to assess how confident mothers are that they are effectively breastfeeding and meeting their own need of self-esteem in regards to their own skill and ability with breastfeeding practice (Mulder & Johnson, 2010). Therefore, use of this statement allowed for tracking changes in maternal breastfeeding confidence over the six-week data collection period as participants had contact with the BFS.

Maternal Wellbeing. "Over the past five hours I've been feeling good about myself". The question for this construct was drawn from the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), which was developed to assess a broad conceptual interpretation of wellbeing. This statement was included to explore maternal wellbeing during engagement with the BFS and the relationship between breastfeeding difficulties and maternal wellbeing, alongside the impact of the BFS on the relationship between breastfeeding and wellbeing (as discussed in chapter one).

The WEMWBS has been validated as an acceptable tool for measuring positive mental health and wellbeing in student (œ= 0.89) and general population (œ= 0.91) samples (Tennant et al., 2007). Additionally, the WEMWBS has also been used for measuring pre- and post-intervention maternal mental health and wellbeing in pregnant women and post-birth (Steen et al., 2019). All statements presented in the WEMWBS are positively framed in order to promote positive mental wellbeing rather than identify problems in individual mental wellbeing.

Attachment. "Over the past five hours I have felt close to my baby". The item for this construct was drawn from the Mother-Infant Bonding Questionnaire (MIBQ), a tool that has been validated to measure maternal emotional feelings and attitudes towards their baby in post-partum mothers (œ= 0.71) (Taylor et al., 2005). The use of this statement in the current study allowed for exploration of the relationship between breastfeeding and mother/infant attachment and additionally the potential impact of the BFS on this relationship.

Qualitative Measures

A semi-structured follow-up interview (see full interview schedule in Appendix E), was conducted to supplement data collected by surveys. Questions asked aimed to examine the participants' perceptions and experience of breastfeeding prior to and following their contact with the BFS. Questions about maternal and infant wellbeing were also included and specific questions about the participant's experience of the service were asked to identify ways in which the BFS may have contributed to changes (or lack of changes) in perception and experience of breastfeeding. Together, it was expected that answers to these questions would assist in evaluating and interpreting EMS data and ultimately generate increased and comprehensive understanding of said data and the impact of the BFS on breastfeeding perceptions and experiences.

Procedure

Following providing informed consent to participate in the Breastfeeding Experience Study, participants were linked to the first of the Breastfeeding Experience surveys. After completing the first of these, participants were sent text messages with the link to the survey twice daily for 6 weeks, the first around midday and the second in the evening dependant on when they filled out their first survey. A reminder was sent to participants a few hours after each survey had been sent if they had not completed the previous one. Data was gathered though out baseline and intervention to examine any change influenced by participant engagement with the BFS.

Baseline

Participants were asked to complete at least 3 surveys prior to their appointment with the LC. This meant that during the initial days of data collection, the time that surveys were sent to

participants was dependant on the time of day that they filled in and returned their consent form and first survey. For example, if the participant had sent in their first survey in the afternoon on a particular day and then her appointment with the LC was 24 hours later, the next survey was sent in the evening and the next midmorning the following day in order to gain appropriate baseline data (at least three surveys). Due to the responsive nature of the service, the time between participants completing their initial survey and seeing the LC (i.e., baseline) was often short. The baseline period ended following participants' first appointment with the LC.

Intervention

Following their appointment with the LC, the delivery of the surveys became more fixed due to the requirements of the baseline period no longer applying in terms of minimum amount of data required. As such, surveys were sent at midday and in the evening although not all surveys sent during this period were completed. If participants missed a survey, they were not immediately dropped from the study. If participants missed a survey, they were sent a reminder text message. If participants still did not complete the survey after receiving a reminder, the next scheduled survey was still sent. This flexibility was deemed necessary due to the likelihood of the population being examined experiencing high levels of stress and survey completion not being a priority in comparison to the day-to-day needs of a mother with a new-born infant (particularly one already experiencing breastfeeding issues). If participants continued to not complete surveys, then this was perceived as informal withdrawal from the study. Although surveys were missed every now and then engagement in data collection from the participants was high and informal (or formal) withdrawal did not occur. The average number of surveys completed by all participants over the six-week data collection period was 74.

As mentioned previously, the intervention provided by the BFS did not always progress in a uniformed way and was influenced by individual need and environmental factors. Therefore, the intervention period in terms of participant contact/engagement with the BFS was different for each participant and was influenced by location (rural or urban), availability/accessibility of M4M groups, complexity of individual breastfeeding issues/level of need and capacity of the service. Accordingly, each participant's intervention will be described at an individual rather than group level.

Follow-up Interview

When participants had completed the last survey for the six-week data collection period they were sent a text message informing them that they would be contacted by the researcher to organise a time and location for their follow-up interview (participants were given the option of being interviewed in their home or meeting at the Waitaha offices. All interviews were conducted in participants' homes. At the beginning of the interview the study information provided in the information sheet and consent forms was reviewed, with a focus on confidentiality. Interviews followed a semi-structured format to allow for broader discussion of the participant's experiences and allow for follow-up questions to any of the participant's responses. Interviews were between 20-30 minutes and were recorded on a handheld digital recording device and subsequently transcribed for analysis. All participants opted to review the typed transcripts and were able to ask for changes/edits required to protect the confidentiality of themselves and their family.

Data Analysis

Repeated Measures Survey

The data were transferred into graph form using Excel software in order to conduct visual analysis of each participant's data. Visual analysis of graphed data is a key element of SCED and involves assessing whether the intervention was responsible for any changes in behaviour (Lane & Gast, 2014). In order to make an overall judgement about the reliability of any changes the data presented in the graph were interpreted and evaluated based on four systematic criteria (Kazdin, 2019). These criteria as described by Kazdin (2019) are described in Table 2.

Table 2

Visual inspection: Characteristics of the data to decide whether behaviour changes are reliable based on graphical display of the observations.

Criteria	Defined
Changes in means (averages)	The mean rate of the behavior shows a change from phase to phase in the expected direction.
Change in trend (slope)	The direction of the slope changes from phase to phase, as for example showing no slope (horizontal line) in baseline and an accelerating slope during the intervention phase.
Shift in level	When one phase changes to another, a level refers to the change in behavior from the last day of one phase (e.g., baseline) and the first day of the next phase (e.g., intervention). An abrupt shift facilitates data interpretation.
Latency of change	The period of time between the onset or termination of one phase or condition (e.g., from baseline to intervention) and changes in performance. The closer in time that behavior change occurs after the conditions have been altered, the easier it is to attribute the change to the intervention.

Within and between participant's Analysis of Follow-up Interviews

Within participant analysis of qualitative interview data is presented in descriptive case studies for each participant using discourse from follow-up interviews. Follow-up interview data was also analysed between participants using Braun and Clarke's (2006) reflexive thematic analysis approach to identify common themes in the experiences of participants. Thematic analysis of interview data involved generation of codes, searching the data for themes relevant to the research questions, reviewing these themes then defining and naming

them before reporting on findings (Braun & Clarke, 2006). A further description of this process is outlined in Table 2. In conducting thematic analysis it is essential that the researcher is immersed in the data before coding begins, which usually involves the reading and rereading of data (Braun & Clarke, 2006). In regard to the current study, the researcher conducted all follow-up interviews and transcription of data, and therefore had familiarity with the content being analysed before formal coding. The themes that were consistent across participants were identified and reported.

Chapter Five: Results

This section is broken into three sections. Firstly, individual demographic data and each participant's engagement with the BFS are presented. Secondly, between participants, graphed survey data are presented and the results of visual analysis of graphed data are reported. Thirdly, a within participants descriptive case studies are presented utilising demographic, survey and follow-up interview data. Lastly, results of a between participants thematic analysis of follow-up interview data is presented.

Demographic information

Demographic information was collected via the referral information provided to the BFS and is presented in Table 3. Information collected shows that all participants were of European descent and aged in their early thirties, indicating demographic similarity in. terms of ethnicity and age. In terms of reasons for referral to the BFS, all participants were experiencing nipple pain and difficulty with infant latching among other individual issues. Further individual and referral information collected during follow-up interviews is presented below.

Table 3

Demographic and referral information of participants.

Participant pseudonym	Ethnicity	Age	Infant DOB	Infant ethnicity	Maternal issues	Infant issues
Katie	NZE	34	04/10/20	NZE	Nipple pain, insufficient milk supply	Latching difficulties, possible tongue-tie, slow weight gain.
Holly	NZE	31	25/11/20	NZE	Nipple pain, Breastmilk feeding, milk supply issues	Latching difficulties, possible tongue-tie
Anna	Australian	32	29/12/20	Australian /Samoan	Breastmilk feeding, nipple pain, positioning	Latching difficulties

Note. NZE = NZ European

Katie

Katie was a 34-year-old NZ European married mother of three children, living in an urban town outside of Christchurch. The referral, by her midwife, to the BFS was due to breastfeeding issues with her third child (Kelly), specifically nipple pain and lactation issues, and a suspected tongue-tie. Katie was concerned with her breastfeeding practice as Kelly had not been gaining weight. The initial one-on -one appointment with the LC occurred at the M4M group location close to Katie's home due to her level of need, urban location and proximity to the group. Katie received individual advice/support from the LC and also, she engaged with other mothers attending the M4M group. Katie attended the M4M group once more during the six-week data collection period. Her primary reason for attendance was to seek advice from the LC and to spend time engaging with other mothers who were attending the group. During her follow-up interview Katie reported that she intended on going back to the group at least once mores, and that she was maintaining breastfeeding with Kelly.

Holly

Holly was a 31-year-old NZ European married mother of Angus, her first child, living in a small rural village in the Selwyn district of Canterbury. Holly had been having issues with Angus's feeding from very early on as he was falling asleep minutes after beginning feeding and she did not feel as though he was getting enough food, although he was meeting all his weight increase targets. Additionally, Holly was experiencing pain while breastfeeding. As Holly's midwife discharged her under 6 weeks post birth while she was still experiencing breastfeeding issues, she hired two private IBCLCs to find solutions to her breastfeeding issues, to no avail. She was referred to the BFS by a Plunket Nurse following her first Well-Child visit. At the time of the follow-up interview, Holly was maintaining breastfeeding with Angus and was supplementing with one bottle of formula before his night time sleep.

Holly's initial one-on-one appointment with the LC occurred at her closest M4M group venue (a 30-minute drive from where she lives). Holly received individual advice/support from the LC and interacted with other Mums at the M4M group. Her primary reason for attending was to find solutions for the specific breastfeeding issues she was having. Holly attended the group twice more during the six-week data collection period to have check-ins with the LC and also to interact with the M4M group. During her follow-up Holly did not disclose whether she intended on visiting the group again but had a general practitioner appointment booked as Angus was now experiencing reflux.

Anna

Anna was a 32-year-old European Australian married (to a Samoan man), mother of baby Sara, her first child, living in Christchurch. Anna had been experiencing issues with her first-borns latch, pain during feeding and breastfeeding technique while she was in hospital and at home. Anna was referred to the BFS by her midwife approximately six weeks after Sara was born and when triaged by the BFS was assigned a one-on-one home visit from one of the LC's. Anna had one home visit from the LC was able to contact the LC directly should she need any further support/advice. Anna did not attend any M4M groups. The closest one to her home would have been a nine-minute drive away in a neighbouring suburb.

Visual Analysis of Survey Data

Before reporting on survey data, it is important to note that none of the participants completed every survey that was sent to them, nor were surveys always completed at the time they were sent (could be hours later). However, there were not more than two surveys in a row missed by any participant.

Breastfeeding Difficulty

Figure 2 shows the pattern of breastfeeding difficulty from baseline and after each contact with the BFS. Note the level of breastfeeding difficulty was reversed scored in comparison to other measures. Therefore, an answer of one means that participants were experiencing a great deal of difficulty and an answer of ten meant no difficulty at all.

For Katie, the slope of the graph during baseline and the period following her first contact with the BFS were both variable and although there appears to be an immediate shift in level in the expected direction following her first contact with the BFS, the slope does not show consistent acceleration during this period, although Katie appears to have experienced a small decrease in difficulty breastfeeding after her first contact with the BFS ($\bar{x}$=6.1) when compared to baseline ($\bar{x}$=5.3). Although the shift in level does not appear to be as abrupt immediately following the second contact with the BFS as it was following the first, the slope of the graph accelerates upwards and then remains consistently high with a little variability until the end of the data collection period. This suggests that there was a further and larger decrease in difficulty breastfeeding after her second contact with the BFS ($\bar{x}$=8.5). Overall, it appears that Katie experienced a decrease in difficulty breastfeeding following each contact with the BFS, which was maintained over time.

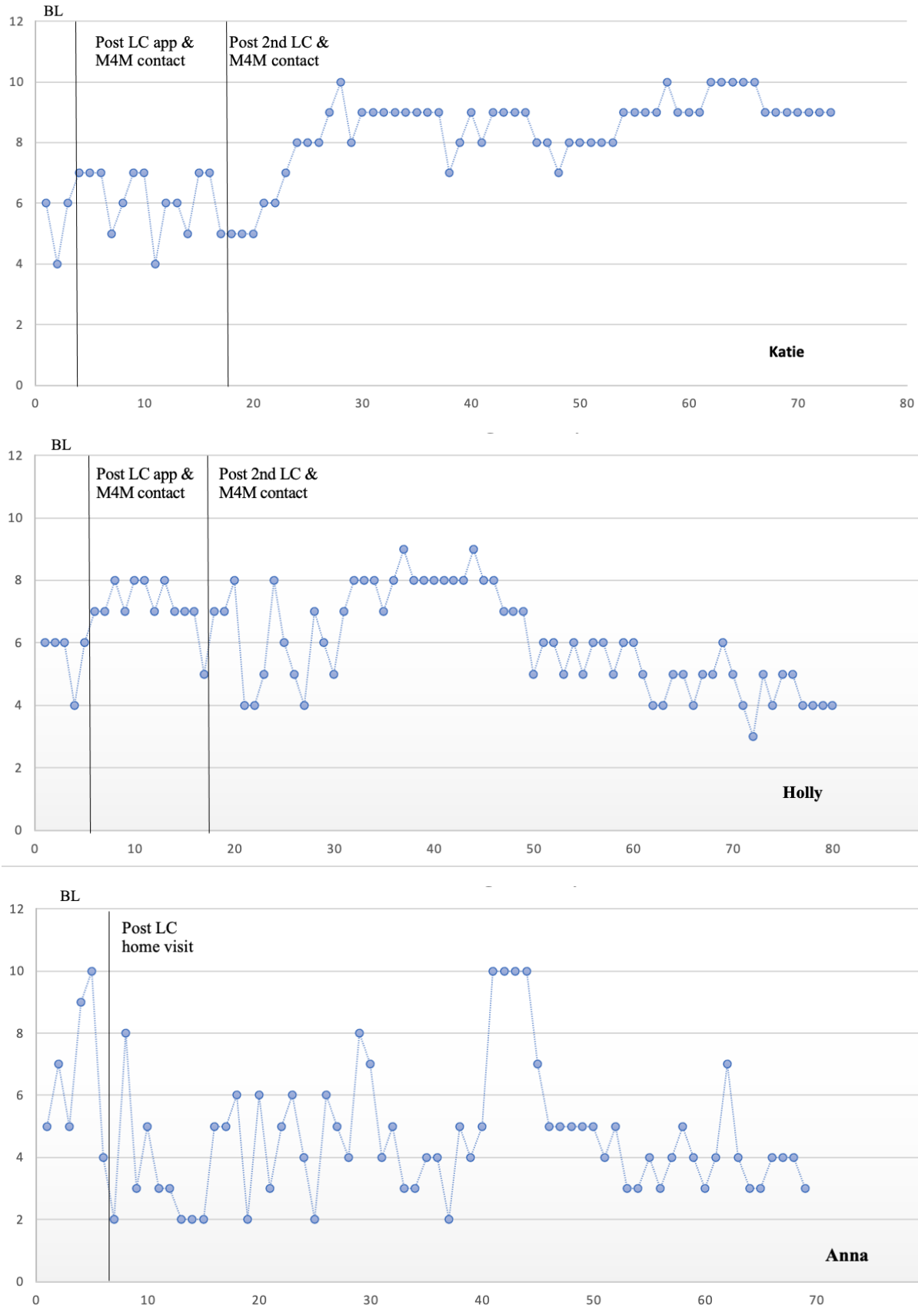
For Holly, the slope of the graph during baseline showed little variability and there was a shift in level immediately following her first contact with the BFS. During the period following her first contact with the BFS levels of breastfeeding difficulty are lower than in baseline and show more consistency with little variability. For Holly there appeared to be a decrease in breastfeeding difficulty following her first contact with the BFS ($\bar{x}$ =7.2) compared to baseline ($\bar{x}$ =5.6). The slope of the graph also shows immediate change following Holly's second contact with the BFS but is variable during the rest of this period.

A period of high variability in level of difficulty is evident before the slope reaches a high point and a short period of consistency before trending in a downwards direction and finishing at levels similar to baseline. These results indicate that Holly experienced a decrease in her levels of breastfeeding difficulty following her first contact with the BFS. However, although the period following her second contact with the BFS shows a small period of low breastfeeding difficulty. Overall, this period is highly variable and indicates that by the end of data collection Holly was experiencing the same levels of difficulty as she was prior to any contact with the BFS. That is, there appears to have been further improvement after the second contact, but the improvement in breastfeeding difficulty does not appear to have been maintained over time.

For Anna, the slope of the graph shows high variability during both baseline and during the period following her home visit with the LC. This suggests high variability in her experience of breastfeeding difficulty throughout the entire six-week data collection period, including baseline. Additionally, the mean rate of self-reported breastfeeding difficulty for Anna increased in the period following her home visit with the LC ($\bar{x}$ =4) compared to baseline ($\bar{x}$ =6.7). This suggests that Anna's breastfeeding difficulty decreased in the period following her home visit with the LC.

Figure 2

Breastfeeding Difficulty



Note. Self-reported level of breastfeeding difficulty over time, gathered via Qualtrics surveys over a 6-week data collection period. The graph text BL indicates the baseline period. The solid black lines represent points of intervention.

Breastfeeding Confidence

Figure 3 shows the pattern of breastfeeding confidence from baseline and after each contact with the BFS. For Katie, although there appeared to be an increase in confidence following her first contact with the BFS, there was a lot of variability in the data, with some data points higher than baseline in the period after her first contact and some lower. However, after her second contact with the BFS, the data showed an upward slope which then stabilised, with little variability, over the rest of the data collection period. Katie's mean level of breastfeeding confidence showed a small increase between baseline ($\bar{x}$ =5.3) and the period following her first contact with the BFS ($\bar{x}$ =6) and a larger increase between the period following her first contact and her second contact with the BFS ($\bar{x}$ =8.4). This indicates that during the period following each contact with the BFS her confidence increased and further that her confidence increased over the entire data collection period.

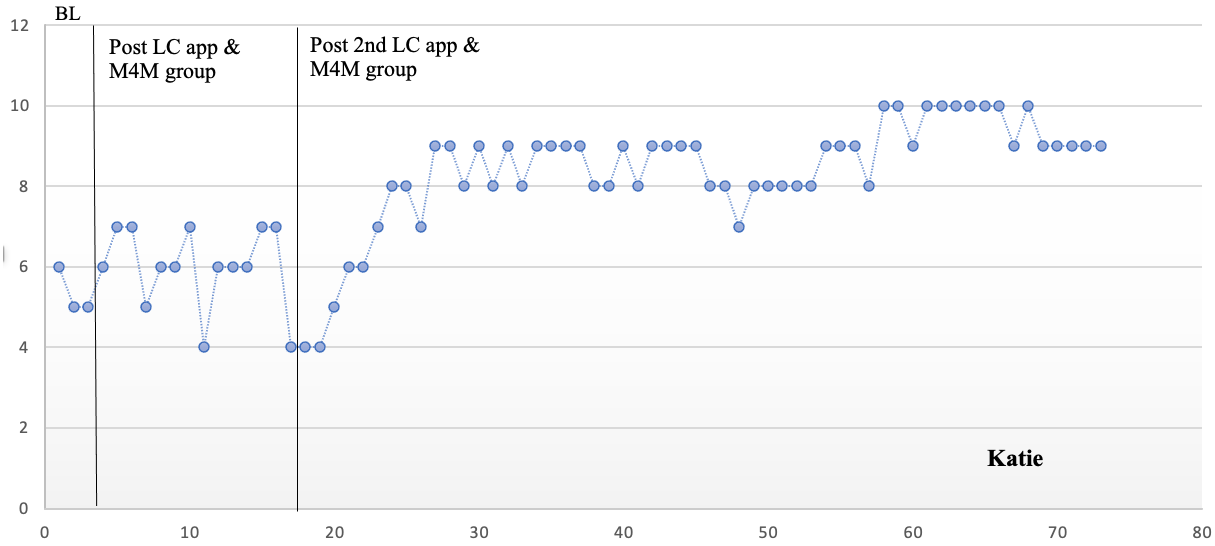
For Holly, there was an immediate increase in her breastfeeding confidence following her first contact with the BFS, and although the data was variable during this period, the slope remains higher than baseline. Although there is an immediate increase in confidence level following Holly's second contact with the BFS, this was followed by slightly variable but overall decreasing level of breastfeeding confidence towards the end of the data collection period. Her mean rate of breastfeeding confidence increased between baseline ($\bar{x}$ =5.2) and the period following her first contact with the BFS ($\bar{x}$ =6.8) and while higher after second contact ($\bar{x}$ =6.1), the improvements in confidence seen after the first contact does not appear to have been maintained. This indicates that Holly's breastfeeding confidence increased

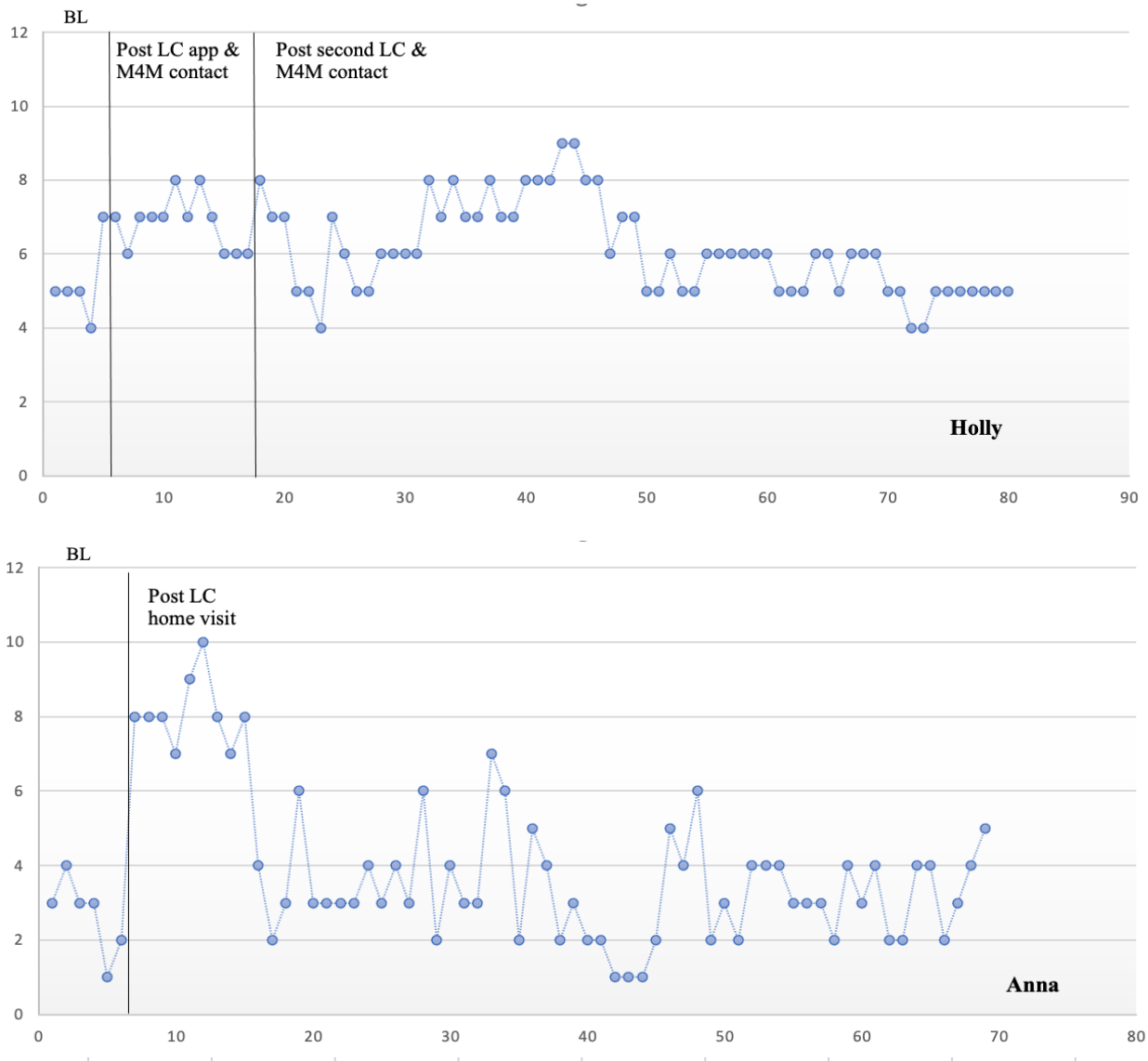
overall following her first visit with the BFS but decreased slightly over the period following her second visit.

For Anna the slope of the graph shows an immediate and marked increase in breastfeeding confidence following her home visit with the LC. This positive change appears to have been maintained for a short period before decreasing and remaining highly variable throughout the remainder of the data collection period. Thus, there was a small increase in Anna's mean level of breastfeeding confidence between baseline ($\bar{x}$ =2.7) and the period following her home visit with the LC ($\bar{x}$ =4).

Figure 3

Breastfeeding Confidence





Note. Self-reported level of breastfeeding confidence over time, gathered via Qualtrics surveys over a 6-week data collection period. The graph text BL indicates the baseline period. The solid black lines represent points of intervention.

Maternal Wellbeing

Figure 4 shows the pattern of maternal wellbeing from baseline and after each contact with the BFS. The slope of Katie's graph is in line with her confidence level in that it shows a steady increase in her wellbeing following each interaction with the BFS and shows consistently high levels of maternal wellbeing during the period following her second contact with the BFS until the end of the data collection period, with the exception of a single drop in

wellbeing. Further to this, the slope shows immediate change in wellbeing level following each contact with the BFS. The combination of a high level of initial wellbeing, moderate changes in level following each contact with the BFS, moderate acceleration of slope and low variability in levels during each period suggest a modest impact of the BFS on Katies wellbeing. Katies mean level of wellbeing increased between baseline ($\bar{x}$ =6.6) and the period following her first contact ($\bar{x}$ =8.2) and increased further after the second BFS contact ($\bar{x}$ =9.4). This indicates that Katies wellbeing improved following each contact with the BFS and remained high through to the end of data collection.

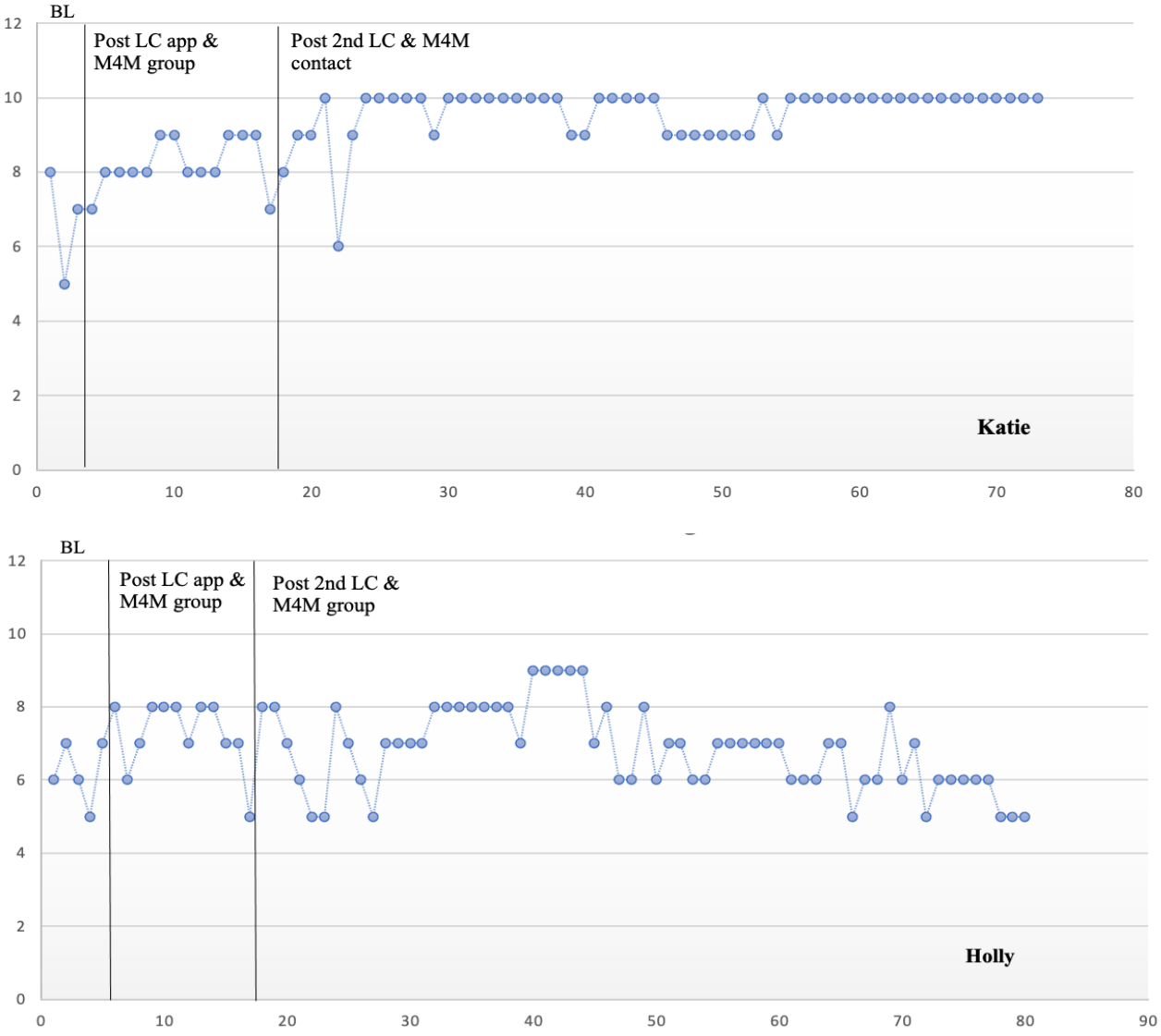
For Holly there was variability in level of maternal wellbeing across each period from baseline until the end of data collection, although there was an immediate increase in wellbeing following each contact with the BFS. During the period following Holly's second contact with the BFS her wellbeing does reach a high point, but this drops down to baseline levels by the end of the data collection period. Holly's mean self-reported wellbeing showed an increased between baseline ($\bar{x}$ =6.2) and the period following her first contact with the BFS ($\bar{x}$ =7.3) and then a decrease between the period following first contact and the period following second contact with the BFS ($\bar{x}$ =6.8). This suggests that Holly's wellbeing may have increased following her contact with the BFS but there was little impact of the BFS on her wellbeing overtime.

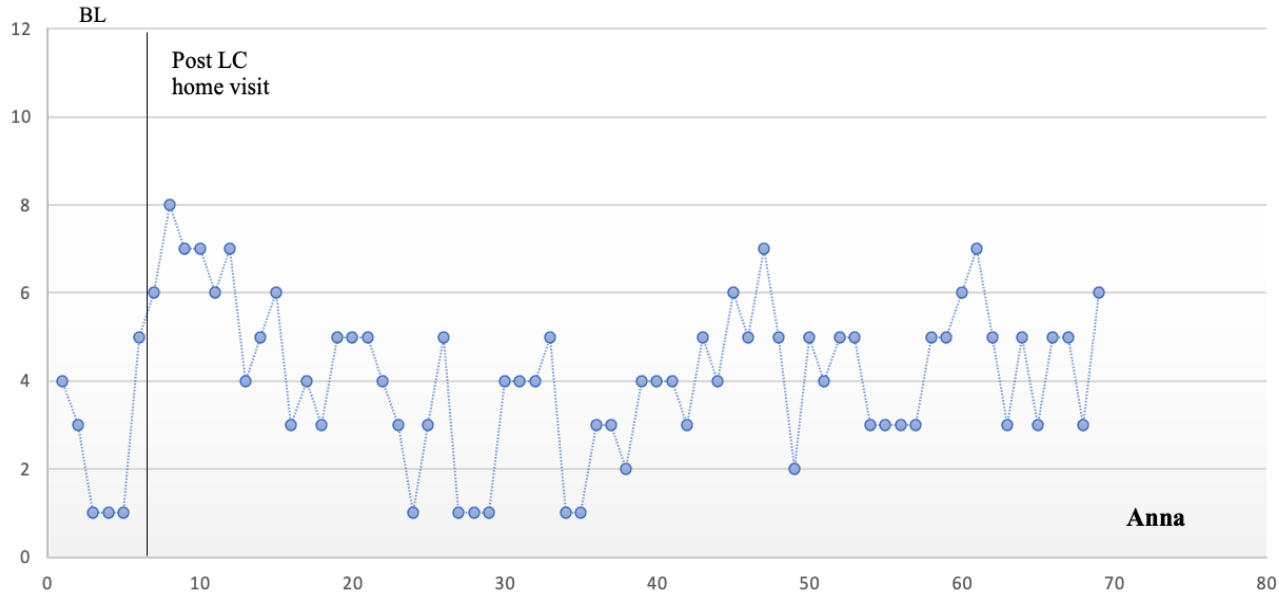
For Anna, although the slope of the graph shows an immediate increase in her wellbeing following her home visit with the LC, the slope then trends downwards and the data are highly variable for the remainder of the data collection period. Anna's mean level of self-reported wellbeing increased between baseline ($\bar{x}$ =2.5) and the period following her home visit with the LC ($\bar{x}$ =4.2) which suggests that her overall wellbeing increased following her home visit with the LC, although it remained highly variable. This suggests that following her home visit with the LC, although initial improvement in wellbeing was evident this only

lasted a short period before her wellbeing decreased and appears to remain unstable until the end of the data collection period.

Figure 4

Maternal Wellbeing





Note. Self-reported level of maternal wellbeing over time, gathered via Qualtrics surveys over a 6-week data collection period. The graph text BL indicates the baseline period. The solid black lines represent points of intervention.

Attachment

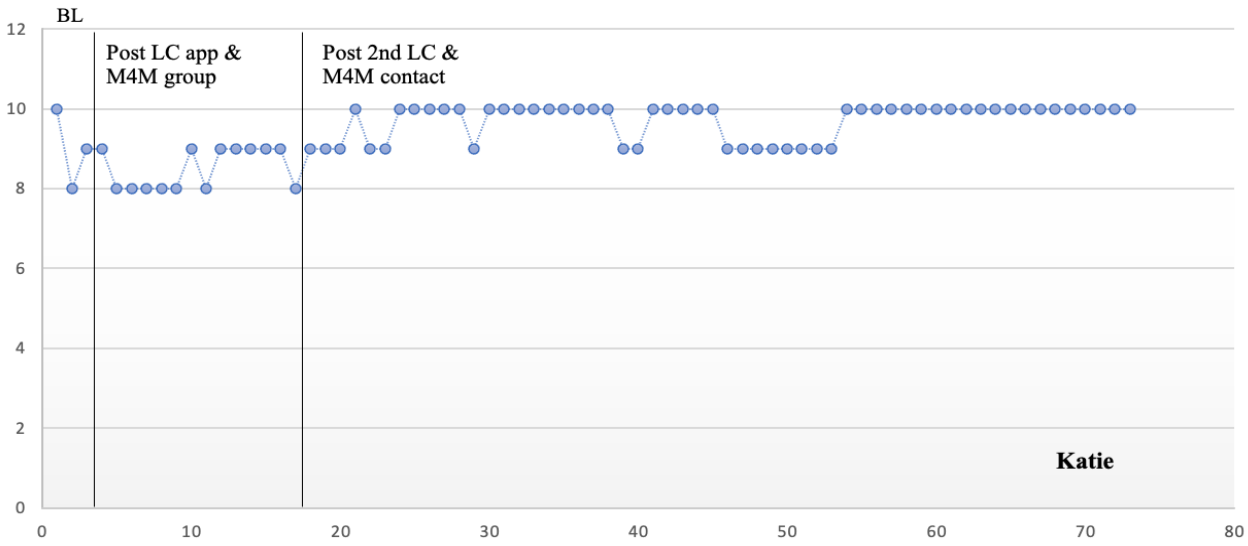
Figure 5 shows the pattern of attachment from baseline and after each contact with the BFS. The slope of the graph for Katie showed consistently high levels of attachment and no acceleration of slope between baseline and the period following her first contact with the BFS. There was also an increase in attachment following her second contact with the BFS and this was maintained little variability through the rest of the data collection period. Katie's mean level of attachment was similar between baseline ($\bar{x}$ =9) and the period following her first contact with the BFS ($\bar{x}$ =8.5) and increased in the period following her second contact with the BFS ($\bar{x}$ =9.7). This indicates a small positive impact of the BFS on Katie's level of attachment with her baby.

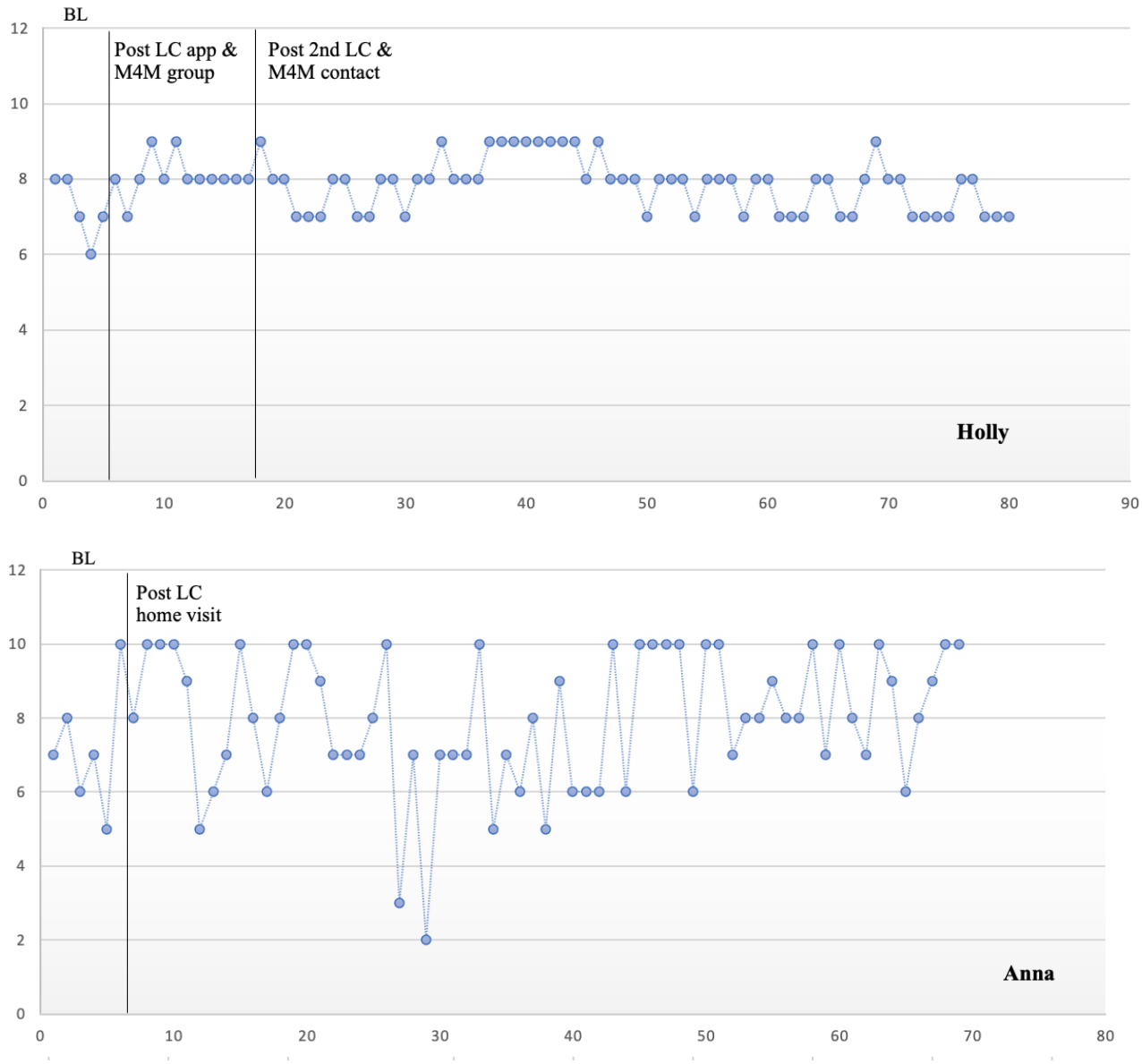
The slope of Holly's graph shows an immediate change in attachment following her first contact with the BFS. Although Holly's graph shows an immediate increase in attachment following her second contact with the BFS, this does not appear to have been maintained and

appears to have decreased to a similar level as after her first contact with the BFS. Holly's mean level of attachment with her baby increased between baseline ($\bar{x}$ =7.2) and the period following her first contact with the BFS ($\bar{x}$ =8.1) and then there was a small decrease in the period second contact with the BFS ($\bar{x}$ =7.9), although remained slightly higher than at baseline. This suggests that while there may have been a positive impact on Holly's attachment with her baby following her first contact. Overall, there does not appear to have been a large impact of the BFS on Holly's feelings of attachment with her baby.

The pattern of Anna's data during baseline shows a lot of variability in her level of attachment with her baby and the last data point was the highest during baseline. This high variability continued following her home visit with the LC and there does not appear to have been any trend in the data. There was a small increase in Anna's mean level of attachment with her baby between baseline ($\bar{x}$ =7.2) and during the period following her home visit with the LC ($\bar{x}$ =7.9). This suggests a possible small impact of the BFS on Anna's feelings of attachment with her baby, although this remained highly variable.

Figure 5:
Attachment





Note. Self-reported level of attachment/closeness over time, gathered via Qualtrics surveys over a 6-week data collection period. The graph text BL indicates the baseline period. The solid black lines represent points of intervention.

Within subjects results – Case Studies

The following section will present the individual case studies of each participant by using a combination of quantitative survey data and qualitative follow-up interview data in order to describe the individual experiences and perceptions of participants. These will be presented in a way that aims to answer, at the individual level, the research questions around experience prior to and following from contact with the BFS, specific interactions with the BFS and

impact of the BFS on maternal wellbeing and attachment/closeness between mother and baby.

Katie

As described previously, Katie was a mother of three children and was referred to the breastfeeding service due to issues breastfeeding her third child, Kelly. Katie breastfed both of her previous two children and described these experiences of breastfeeding as being far more straightforward that what she experienced in the early days of breastfeeding Kelly. *"They were relatively easy I guess you could say, um we didn't have too many issues".* Katie and Kelly were referred to the BFS due to nipple pain and lactation issues which Katie described as severe and that the pain involved almost made her give up breastfeeding entirely. *"So, it wasn't um, it was painful, it was hurting me" "Yea it just got to the point where I couldn't take it anymore and I was really close to just picking up a bottle and bottle-feeding her".* Katie's previous experience with breastfeeding was also aided her identification that things were not right in terms of the pain and lactation issues she was experiencing. *"It was kind of like this thing that I just knew straight away when she had her first latch. I was like uh this isn't right she doesn't have a wide enough mouth and she just didn't look right to me"*. Katie described feeling that she was not getting helpful support during the early days post-birth when she began experiencing breastfeeding issues. She also felt she received conflicting information from professionals both at the hospital and at the maternity care facility in terms of how she should be managing and overcoming issues identifying that there was a lack of consistency in messaging. *"They all just have different ideas and there' s just no consistency between what everyone tells you".* Katie also described feeling that she understood why some mothers would cease breastfeeding due to how overwhelming of all this information can be if they had no previous experience *"Yea its quite overwhelming. So, I can see why a lot of people would give up if they hadn't done it before".*

Katie was referred to the service by her midwife due to the issues described above which were believed to be causing the lack of weight gain for Kelly. In comparing her positive experiences breastfeeding her previous Katie spoke of her loss of confidence in her breastfeeding with Kelly and describes an encounter with the midwife as playing a key part in this loss of confidence. *I don't know if that* (lack of breastfeeding issues) *and sleep go together but my older two children weren't really sleepers but ah this one came out and she was a sleeper, and I was really happy about that and I actually said to my midwife, I said, "oh god I've got a sleeper" and she goes "oh she's not getting enough* (breastmilk), *she's sleeping too much" "So that really knocked my confidence and then we did find out that she was losing weight and that's when I accessed the services".* Katie described how this comment from her midwife and the subsequent finding that Kelly was not gaining weight caused her to feel worry and anxiety around how much breastmilk she was receiving that worry was not able to be satiated until Kelly had her next weigh in "*Yea once I've had those check in's and I know that she's gained weight and I know she's had a healthy amount of weight gain per day from the last one then I'm totally okay...I'm happy again".*

Katie described the support that she received from the LC during her first contact with the BFS as being practical, helpful and solutions focused. During her initial visit with Kate, they checked how Kelly was latching and feeding. With everything appearing to be in working order, Katie left feeling good about things and that she needed to *"trust her instincts"* and that she *"would know"* if the baby was hungry. However, after discovering following the first engagement with the LC that Kelly was still losing weight, she accessed the service a second time and received further support in finding solutions to her issues *"I went back, and Kate gave me these tubes and I had to attach them to my boob, but they actually had some formula, so I sat the formula bottle between my breasts and had the tube...so I was feeding her while I was stimulating my breast, but she was actually taking formula to get a feed".*

Katie described using this technique for a few days and that doing so was successful in decreasing her breastfeeding difficulty which is consistent with the graphed data. However, although the graphed data suggests that Katie's breastfeeding confidence also improved following this second visit, Katie described her confidence as being linked to Kelly's weight gain and knowledge that she was providing enough milk. *"You* (the researcher) *probably noticed that as I'm getting further away for from knowing how she is going with her weight gain my confidence does drop of a wee bit slightly".* This is consistent with the occasional drops in level of graphed data during this period. Katie briefly discussed her attendance at the M4M groups. She described attending to have her first appointment with the LC and then hanging around after with the other mothers there. It appeared that her interaction with the group was more out of necessity in terms of her accessing the LC rather than her requiring or gaining anything in terms of social support. Katie reported that her engagement with the LC met her needs and was more straightforward and helpful than the inconsistent support that had overwhelmed her in the early days of breastfeeding. *Like I said its probably...before you leave and come home from the hospital the information you get there with the changeover of midwives and nurses and everyone's got their own idea about what works and what doesn't that you just get all this conflicting information and its quite overwhelming. But when I went to Kate she was very like "nope she's fine, she's latching, she's great, continue, do this" and then when I went back and said she wasn't gain weight she was like "right, okay" and came up with a plan and yea she was very helpful.*

However, Katie felt that her success with the service may, in part, be attributed to her previous experience with breastfeeding as during her first engagement with the LC, when she described her pain, the LC responded in an off-handed manner "*well it shouldn't be hurting"* whereas Katie knew from previous experience that breastfeeding can hurt. She commented that because she knew this it did not deter her from persevering with breastfeeding but that

she could see how it may put first time mothers off if they think that what they are experiencing is not a "normal" part of breastfeeding. Additionally, when questioned about her perceptions of breastfeeding post-BFS engagement, Katie described persevering with breastfeeding largely due to the convenience of breastfeeding over bottle feeding when she has two other children to care for. *And that's why I really persevered this time, because with having two other kids I can't stop and be like "oh we need to get some water, I need to give her a bottle"*

Katie's survey data indicated that her maternal wellbeing increased overall during the data collection period and was at a higher level and more consistent when compared to the breastfeeding difficulty and confidence data. This suggests that the increase and subsequent maintenance of wellbeing may not have been entirely attributable to the BFS. During her interview, Katie disclosed that she experienced post-natal depression with her last child and that her experience of wellbeing this time around had been completely different. *"So, this time around was very different. Like I've felt very different to what I did with my second. So, I kind of know that in that sense my wellbeing this time around is better*". Similarly, to this, the graphed data for attachment suggested a slight improvement the levels of closeness over the data collection period and much improved consistency in those feelings of closeness. However, these feelings of closeness did not appear to be overly impacted by the BFS interaction in that there is little change in levels across the entire data collection period. This is consistent with how Katie describes her bond during the follow-up interview *"I think I would always have that bond, whether I saw the lactation consultant or not".*

Holly

Holly was a first-time mother and was referred to the BFS by a Plunket Nurse due to multiple issues with breastfeeding, including pain, erratic feeding, a possible tongue-tie and worry

about her baby's milk intake (uncertainty if he was eating enough) after not finding appropriate support with two other private LC's. As Holly was breastfeeding for the first time, she described having no previous experience and feeling unprepared for the realities of breastfeeding *"I didn't know it would be so hard.... you kind of presume it will come naturally".* Additionally, she suggested that some advice, of lack of specific advice from others, prior to giving birth had contributed to this unpreparedness due to creating somewhat unrealistic expectations *"My Mum said she found it really easy and natural", "People don't talk about it, like friends and stuff that have struggled with it in the past have said that its hard, but I didn't realise how hard...or they didn't go into specifics".*

Holly described the anxiety and worry she developed about her baby's feeding habits once she got home from the hospital in that he would only feed for short periods of time and would not settle after a feed "*But like I got so much anxiety when I got home just with not knowing how much he was feeding...I mean looking back now it's just typical new-born feeding, but I was convinced he was starving".* This worry persisted even when he was weighed, and he was making higher than expected weight gains and described her lack of experience as contributing to her perceptions *"I just couldn't figure out how* (how he was gaining weight) *...like you'd put him down for a feed and he wouldn't settle. So, I had it in my head that he wasn't satisfied and kept feeding him and it was like a vicious cycle, but it was obviously just normal".* Holly talked about the unhelpful and inconsistent/conflicting advice she received from professionals during her stay at the hospital which was prolonged (4-5 days) to due to complications experienced during the caesarean birth *"but no one actually really told me, they just kind of did it for you...and you'd have different midwives on shift, and they would all come in and do something different".*

Holly described this unhelpful and inconsistent advice persisting after she left the hospital with in-home supports such as her midwife *"look she was lovely, but because there was*

nothing "wrong" she was like "just keep doing what you're doing" "And then she discharged me around that time where I was really struggling" and also two private LC's she hired *"I think they kind of dismissed my concerns".* During her time at the hospital, Holly received conflicting advice in terms of diagnosis of a possible tongue-tie that could have been impacting her son's feeding, which did not end when she sought support for breastfeeding issues once she had returned home *"And also, I had, those two different LC's say he definitely didn't have a tongue-tie...The midwife, my midwife, said he did. A midwife at the hospital said he did and an LC at the hospital said he was borderline, and she could score him either way if I wanted it snipped".* Holly persevered with her search for solutions to her breastfeeding issues even though she was not finding support to meet her needs *"I had had so much conflicting advice, I just wanted like a definitive answer about the tongue-tie and a plan about my supply".* This search ultimately led her to being referred to the Waitaha BFS during her first visit with her Plunket Nurse.

Holly described feeling like she came away from her appointment with the LC and first contact with the BFS (LC and M4M group) in a better position than she had been prior to her visit *"I think I had more clarity around ...like a plan moving forward".* She attributed her willingness to accept this advice over others to feeling confident in the advice and support she received from the Waitaha LC due to her experience and her own readiness to just follow the advice she was given *"I dunno if it was just because I knew she was super experienced* (the LC) *and a lot of people really rate her or if it was just you know, like I had come to a point in my head where I was like, right I'm just gonna follow what she says cos every Tom Dick and Harry is telling me something different".* Holly also stated that after seeing the LC her feelings towards breastfeeding became more positive *"Yea I started to enjoy it a lot more and just probably a bit more confidence. With those issues anyway.* Although Holly's primary reason for engaging with the BFS was to access the LC she did discuss the value that

came from being at the group in that she was able to pick up valuable information and knowledge from the LC's interactions with the other mothers attending *"you pick up a lot of information in the group when you overhear...like not in a rude way but everyone's just sitting around and the LC will be talking with one Mum about this issue and you think, like you take on that information".* In terms of the M4M group aspect of the BFS, Holly expressed that it was helpful to know that she was not alone in her experiences with breastfeeding *"Umm yea it was helpful...to know that I wasn't the only one struggling".* Holly's perception of the other mothers at the M4M group was that they all appeared to be there to seek advice/support from the LC for specific issues rather than to socialize and connect with the other mothers. She also described the environment as very busy the second time she went, compared to her first meeting with the LC a few days into the New Year *"I walked in 20 minutes late or something and the room was packed. It was...yea it was like an ED or something".* Additionally, she described the LC as appearing to be working hard to meet the demand for her services *"She was very clearly overworked and was going from one person to the next and smashing out...you know she was clearly busy, and it looks like the group was meant to be this and had turned into that".*

Despite this, Holly stated that she felt that the BFS met her needs in terms of helping her find solutions and clarity around the issues she was experiencing "*Yes,* (the service met her needs) *for those issues absolutely".* However, she also reported that she experienced additional issues and uncertainty over the six-week data collection period *"But then three weeks later something else comes up".* This is consistent with the graphed data of breastfeeding difficulty and confidence, in that following her first visit with the LC the level of difficulty decreased and her confidence increased for a time, but this was followed by a lot of variability in difficulty and confidence over the rest of the data collection period. This is reflected in Holly's statement that breastfeeding was a constant journey in terms of getting over one

challenge and then being faced with another. She stated that she felt her wellbeing had improved since her contact with the BFS which is somewhat inconsistent to the graphed data. When asked to consider her wellbeing and feelings of attachment with her son Holly described the early days of being a mother as being a bit of a blur *"I look back on it like...yea you've been on a big bender or something and don't really remember anything".* Further to this, Holly described feeling unsure if her contact with the BFS had much of an impact on her feelings of closeness with her son *"I think so, maybe"* and described feeling close in retrospect but not necessarily reflecting on her closeness/attachment with her baby in the moment *"I don't specifically remember sitting there and being like, you know gazing at him and thinking oh my god he's amazing...but I'm sure I did".* This is also reflected in the graphed attachment data, in that she had high levels of attachment with little variability over the entire data collection period, showing a small increase following her first contact with the BFS.

Anna

Anna was a first-time mother who described breastfeeding as something she had always wanted and planned to do once she had children *"I thought it was something natural, something that I wanted to do ever since I wanted kids".* Further to this, before having her baby Anna described assuming that breastfeeding was something that would have been relatively uncomplicated and innate due to what she understood of breastfeeding and what she had seen and heard from other family members *"I thought it was very straightforward and I mean I've seen my sister in laws do it but yea".* However, for Anna the reality of breastfeeding turned out to be a lot different from what she had expected *"I never thought it would be this hard"* and she experienced pain when breastfeeding, issues with latching and early worry about supply *"at that time I was concerned that baby wasn't getting enough because it was just that...what's the liquid stuff that comes out?".* Following what Anna

described as a traumatic birth (a caesarean with complications following a four-day inducing period as the baby was two weeks overdue) she felt pressure from her husband and the nurses at the hospital to resolve her breastfeeding issues quickly. In terms of her husband, she described pressure to be able to breastfeed that was related to his cultural expectations and the short amount of time they had been together as a couple *"um my husband's Samoan so there's like a cultural thing that...and we've only been together a short time...um so there was that pressure as well".* Alongside this she described feeling pressure from the nurses at the hospital due to the time pressure that they were under and the large number of patients that she perceived they had to attend to *"the nurses, they obviously have that time pressure that they have to be on and it's not just the one patient, right? It's a lot of patients so I just felt pressure to be at a certain stage before they left".* Compounding this feeling of pressure were Anna's own understanding of the benefits of breastmilk for her baby which made it feel even more important to her that she should overcame the issues with breastfeeding as at the time she had not considered that she may need to pump *"It's not a fun feeling and just like that pressure...you know breastmilk is best...that's you know...the more natural thing".*

Further to this, Anna described receiving inconsistent and conflicting advice from the nurses at the hospital that did not make it easy to overcome the confusion she was feeling about breastfeeding and find solutions to the issues she was experiencing *"I had like three or four different nurses over four days...all with different approaches...which you know that's what they have been taught or...I dunno it's just very confusing".* Anna described feeling that overall, the time that she spent at the hospital was not a good start to her breastfeeding experience *"from the start it hasn't been easy"* nor to her feeling ready to breastfeed without support at home. She described her time in the hospital in relation to breastfeeding as *"confusing"* and *"messy".* Anna's difficulty breastfeeding and her confusion as to how to solve these issues continued once she returned home with her baby. She described trying to

persevere with breastfeeding with the information/advice that she was getting from her midwife and other sources but also acknowledged that she should have asked for extra support sooner and placed a certain amount of blame on herself for not doing so *"it was partly my fault like my midwives were great and shared as much information they could... but it wasn't until I was like I'm gonna YouTube this stuff because I thought I was doing the right thing like having the baby like up and all that kind of thing...yea so I should have got the referral to the LC sooner rather than later I know now".* Anna explained that her own stubbornness held her back from asking for extra support early on after she returned home as she wanted to be able to figure things herself and just persevere *"I was like yup I can do it cos I have this thing when I get stuff in my head and I'm like I'm gonna do it...like just push it push it push it...and then usually I'll just collapse in a heap when I should have asked for help earlier".* Right before her referral to the BFS Anna reports her confidence about her ability to breastfeed and overcome issues was low and that things had become overwhelming and distressing *"it was just hurting, and I'm stressed and there was like other things going on".* The referral was made to the Waitaha BFS by Anna's midwife approximately 4-5 weeks after she returned home from the hospital and she was seen at home by one of the LC three days after she was first contacted and triaged by the service.

Anna described her experience with the LC as being very positive and helpful in terms of both the approach, reassurance and practical advice *"amazing like to just have someone say it's okay and like try this or try this...her approach was just really clear".* Anna reported that the expertise and detailed explanations of how and why to do things a certain way were something that she valued in her time with the LC "*and like the background of why...you know we need to do it this way or it can help this way...that was probably the most helpful and knowing that there's more than one way to do it".* Reassurance, practical advice and an understanding attitude from the LC was something that Anna described as giving her what

she needed to progress with breastfeeding *"it gave me enough tools to kind of, to take control of the journey rather than just all over the place with information and stuff".*

Anna described the time spent with the LC as comforting and calming for her and her baby *"like she* (baby) *was calm, I was calm it was just amazing"* and when questioned about if her contact with the BFS helped her to feel closer to her baby she expressed that at the time it did *"yes, I would say yes because um we were both so settled in that experience".* This increased attachment was not evident in graphed data. Anna described her wellbeing as improved since her contact with the BFS. However, the graphed data showed an initial improvement in wellbeing that then declined. In line with this, Anna reported that her issues with breastfeeding were not the only things that were or had been stressors during this time. Anna spoke of how she had been finding it easier to lay down and breastfeed due to the weight of her baby but that this was not always easy when other demands were required of her *"You know, because of lifestyle and family like I can't just be at home to lay down".*

Between Participant Thematic Analysis

The following section presents the findings of the between participant thematic analysis of qualitative data, or more specifically the search for common themes across individual follow-up interview discourse. To best answer the research questions this section has been divided into categories and themes the areas of particular interest in this research. These included experiences and perceptions prior to engagement with the Waitaha BFS, following engagement with the Waitaha BFS, engagement and support experiences with the BFS and maternal/infant wellbeing and attachment. Several themes were identified across all participants and a further theme that related to wellbeing and attachment were identified that were common across two of the three participants. This theme is presented as it relates to the research questions related to psychological wellbeing. Therefore, themes numbers 1-6 are

themes common across all participants and theme 7 is common to two participants (Holly and Anna).

Perceptions and experiences of breastfeeding prior to engagement with the Waitaha BFS

Theme One: Pain, Preparedness and Pressure. All participants described finding pain and other technical issues that came with their breastfeeding experience as a contributing factor to their difficulty with breastfeeding.

Katie: *"Um, so it wasn't...it was painful, it was hurting me. A lot".*

Holly: *"Yup it was painful", "The actual feeding was hard the whole way through"*

Anna: *"...it was just it was hurting me, and I'm stressed and there was like other stuff going on"*

Additionally, to this, participants described feeling somewhat unprepared for the pain and difficulty that can be involved with breastfeeding. Both Holly and Anna as first-time mothers with no prior breastfeeding experience described assumptions prior to giving birth that breastfeeding was innate and would come naturally. Holly alluded to her lack of experience with breastfeeding and lack of realistic advice from people close to her prior to giving birth as leaving her unprepared for the realities of breastfeeding.

Holly: *"Um, so he's my first so no experience. I didn't know it would be so hard* (laughs). *Like...I guess...you kinda presume it will come naturally. Umm and my Mum said she found it really easy and natural".*

Anna also described basing her assumptions on the perceived "naturalness" of breastfeeding on what she had seen others in her family go through and expected her journey would mirror those experiences.

Anna: *"Umm I thought it was something natural, something that I wanted to do ever since I wanted kids. Umm yea I thought it was very straightforward and I mean I've seen my sister in laws do it but yea..."*

Katie described feeling unprepared for the pain even though she had experienced breastfeeding before, which she attributed to the gap (4 years) between children and her perception was that the pain was worse this time around.

Researcher: *"And you didn't have that kind of pain with the other two?"*

Katie: *"Um, I think I probably did but I didn't remember how bad it was. And it probably wasn't as bad as this one felt.*

Unrealistic expectations and unpreparedness for breastfeeding difficulties was compounded by pressure either external or intrinsic (sometimes both) for participants to get a handle on their breastfeeding and overcome difficulties. For Katie this pressure to persevere was centred around her desire to breastfeed to avoid pumping/giving formula and the extra tasks that comes along with that.

Katie: *"Yea its time that I don't have and its extra things I need to think about taking that I just don't need to take when I could just persevere and do it myself".*

For Anna, this pressure was largely external as she felt early pressure to be able to breastfeed her baby from both professionals in the hospital environment and also pressure from her husband which she related to cultural expectations.

Anna: *"um my husband's Samoan so there's like a cultural thing that...and we've only been together a short amount of time...um so there was that pressure as well..."*

Theme Two: Nutritional Uncertainty. Participants' uncertainty as to whether they were providing adequate nutrition to their baby was a common theme that emerged about their experience of breastfeeding prior to accessing the Waitaha BFS.

Holly: *"But like I got so much anxiety when I got home just not knowing how much he was feeding"*

For Katie, this worry began due to an offhand comment from her midwife that turned out to have elements of truth when they found out her daughter was not gaining weight.

Katie: *"I mean yea, I don't know if that (*breastfeeding) *and sleep go together but my older two weren't really sleepers but ah this one came out and she was a sleeper, and I was really happy about that and I actually said that to my midwife. I said, "Oh thank god I've got a sleeper" and she goes "Oh she's not getting enough* (breastmilk), *she's sleeping too much. Because apparently babies, if they're not getting enough can be quite sleepy as well".*

Katie described this exchange as knocking her confidence with breastfeeding and planting the seed of anxiety around her baby's breastmilk intake that could only be calmed when they had weigh in's and she knew Kelly was gaining weight.

For Holly, her uncertainty of not providing adequate nutrition (or enough milk) to her son centred on his feeding practices and her lack of understanding about new-born feeding and her supply. Similarly, Anna's uncertainty about nutrition was based on her lack of understanding around the early stages of breastfeeding and colostrum production.

Holly: *I mean looking back now it's just typical new-born feeding, but I was convinced he was starving. But he wasn't* (starving), *my midwife was coming, and he was making huge gains, but I couldn't figure out how, given he would fall asleep on the boob after a few minutes".*

Anna: *"at that time I was concerned that baby wasn't getting enough because it was just that...what's that liquid stuff that comes out..."*

Holly's worry and uncertainty about her supply and her son's intake prior to her engagement with the BFS was not satiated by knowledge that he was gaining weight. In comparison Katie's worry was tightly linked to her baby's weight both prior to and following her contact with the BFS. She described not being able to relax until her baby had been weighed and that as time passed from a weigh in the worse, she felt.

Katie: *"Yea, once I've had those check in's and I know she's had a health amount of weight gained per day, or whatever, from the last one then I'm totally okay again... I'm happy again".*

Theme 3: Conflicting and Inconsistent Advice and Support. Prior to their engagement with the Waitaha BFS, all participants described receiving conflicting and inconsistent advice regarding breastfeeding from professionals both at the hospital and in the community.

Katie: *Just different professionals, probably the hospital midwives at Christchurch hospital but also the midwives at the maternity hospital as well...they just all have different ideas and there's just no consistency between what everyone tells you. They've all got different ideas, you've all got to hold the baby differently, you've all gotta...you know?"*

Holly: ....*and I think probably at the hospital, cos I ended up staying there for five- or six-days cos I had complications, but no one actually really told me they just kind of did it for you...and you'd have different midwives on shift, and they would all come in and do something different.*

Anna: *"Christchurch Women's wasn't the best experience, and I think it's just their system that lets them down. Umm so with the breastfeeding, I had like 3 or 4 different nurses...all*

different approaches...which you know that's what they have been taught or...I dunno it's just very confusing".

All participants described this experience t being unhelpful consistent and created feelings of confusion and being overwhelmed. Katie described that lack of consistent advice about the technique she should apply made her feel overwhelmed and indicated that it was her previous experience with breastfeeding that helped her persevere despite the unhelpful professional advice.

Katie: *They'll all do different things and "let them latch on" or "support their head and push them on" just no consistency.*

Researcher: *So, you're starting do to something and then being told to change it?*

Katie: *"Yea, it's quite overwhelming. So, I can see why a lot of people would give up if they hadn't done it before".*

Anna also described feeling overwhelmed by the advice she was given that she did not understand, as well as the expectations placed on her by others and the rough approach of the nurses at the hospital.

Anna: *"No consistent advice, like one of them got me a pump and set me up with an pump and she just kind of ditched all the equipment and here is how to* (use it) *and that was it and I was expecting her to come back and show me you know like...I don't know how to...like honestly I wasn't expecting to use that so yea took the next nurse to come in and I said "look the nurse just left me with this equipment and I'm not really sure how to use it"".*

For Holly, the inconsistent advice from professionals continued once she left hospital when she hired two private LCs prior to her referral to the Waitaha BFS in order to find answers and solutions for the difficulties she was having breastfeeding her son.

Holly: *"And also I had, those two different lactation consultants say he definitely didn't have a tongue tie. The midwife, my midwife, said he did. A midwife at the hospital said he did and a LC at the hospital said he was borderline, and she could score him either way and if I wanted it snipped, she would score it a 5 or whatever it needed to be and if I didn't want it snipped, she would score it a 4.*

Experiences of Engagement and Support with the Waitaha BFS

Theme Four: Clarity and Reassurance. Although the Waitaha BFS was not experienced in the same way by each of the participants in the sense that one participant had a single home visit with an LC and the other two saw the LC at during M4M groups, all participants reported coming away from their time with the service feeling as though they had received reassurance and clarity about the difficulties they were experiencing, and that they had a plan to move forward.

Katie: *"But then I went to the LC she was very like "nope she's fine, she's latching, she's great, continue, do this" and then when I went back and said she wasn't gaining weight she was like "right okay" and came up with a plan and yea she was very helpful".*

Holly*: Ummm, I think I had more clarity around...like a plan moving forward. And look, I dunno if it was just because I knew she was super experienced and a lot of people really rate her or if it was just you know like I had come to a point in my head where I was like "right I'm just gonna follow what she says cos every Tom, Dick and Harry is telling me something different...um I just had more clarity about what to do with those issues*

For Anna, receiving reassurance that the difficulties she was having were not of her own making (something which she did not realise as a first-time mother) and having someone

come in and be very clear in their approach to advising and offering solutions was something that she experienced very positively.

Anna: *"like just to have someone say It's okay or try this or try this...her approach was just really clear. And to know that it was like that it was no one's fault that it wasn't working out, like it's just a combination of things you know?"*

Holly, as a first-time mother, described also valuing the support and reassurance that came from her contact with the M4M groups (the other part of the Waitaha BFS) in that it made her feel like she was not the only one experiencing difficulties with breastfeeding.

Holly: *"Umm yea it was helpful* (being around other Mum's) *...to know that I wasn't the only one struggling".*

Theme Five: An Available Source of Practical Advice. All participants in the current study reported examples of practical advice and information that they received during their engagement with the BFS that helped them to overcome specific difficulties they were experiencing and to gain more knowledge and understanding of breastfeeding in general.

Katie: *"But yea, and then obviously we found out that she was losing weight and I went back, and the LC gave me these tubes and I had to attach them to my boob but they actually had some formula and so I sat the formula bottle between my breasts and had the tube...so I was feeding her while I was stimulating my breasts, but she was actually taking the formula to get a feed. And that seemed to have worked and I maybe did that for three days um took some supplements, and it seems to have worked.*

Anna: *"And when she showed me all the different types of ways of doing it* (holding your baby to breastfeed)*, I was like "Oh my gosh!" because I just thought it was the standard you know pillow under and cradling but no that's not the case".*

Alongside the practical advice she received from the LC about her specific issues, Holly described feeling that the tips and information she picked up just from sitting around in the group with other mothers and overhearing the advice that the LC was giving to them was also helpful to her and helped to improve her own knowledge base. Similarly, Anna reported feeling as though the information and advice she had been given by the LC gave her what she needed to keep moving forward with her breastfeeding.

Holly: *"you pick up a lot of information in the group when you overhear...not in a rude way but everyone's just sitting around and the LC will be talking with one Mum about this issue and you think, like you take on that information. So, I gained a lot of knowledge through that".*

Anna: *"Yea it gave me enough tools to kind of take control of the journey rather than just all over the place with information and stuff".*

All three participants described the BFS as having met their needs in terms of the specific reasons they had accessed the service. Further they felt as though they were able to contact the BFS in the future should other difficulties arise that they feel they are unable to manage.

Researcher: *Okay so, overall do you feel like the service met your needs?*

Holly: *Yes, for those issues at the time absolutely.*

Researcher (to Anna): *"Okay so do you feel overall, I mean you've said that you feel like things have been up and down a bit with that journey, that it* (the BFS) *improved your confidence?*

Anna: *Yea definitely and I think just knowing that I can contact them* (the LC) *or that there was someone to talk to if I needed to get some more help.*

Katie felt that she was easily able to drop into the M4M groups and access the LC to tackle other concerns that had risen for her that she was not able to solve on her own.

Katie: *"I think I will pop in this week just because my GP was unable to get her weighed this week so I might just pop in and see...cos I did notice that another day I was there that there was another mother that was having the same issue...well not the same issue as I am but she wanted to get her baby weighed and Kate happily weighed her baby and just put her mind at ease about how that was going for her"*

Perceptions and Experiences of Breastfeeding following Engagement with the Waitaha BFS

Theme Six: A Constant Journey. Although all participants in this study reported some positive change due to the positive interactions with and knowledge gained from their interactions with the BFS, none of them indicated that their engagement with the service had prevented other issues from arising further down the track.

Holly: *"Yea I started to enjoy it a lot more and just probably a bit more confidence. With those issues anyway. But then three weeks later something else comes up.*

Anna: *Ummm it did* (feelings change towards breastfeeding) ...*because like simple positioning was great but then as time went on...it's just really hard.*

Katie's piece of mind was tightly linked with her knowledge that her baby was gaining weight. Therefore, although she described the BFS and her engagement with the LC as having met her needs in terms of stimulating her supply, this did not stop Katie from feeling anxious about her ability to provide her baby with adequate nutrition going forward.

Katie: *"As I'm getting further away from knowing how she's going with her weight my confidence does drop off a bit, slightly.*

After Anna's home visit with the LC and finding solutions to her baby's latching issues. However, as time when on other issues began to arise that were influenced by lifestyle that continued to make managing breastfeeding difficult and ultimately influenced her switch to formula feeding.

Anna: *"No, no longer breastfeeding, formula all the way now. It became such a struggle to manage with all the other external pressures I'm experiencing at the moment".*

Impact of the Waitaha BFS on Wellbeing and Attachment

Theme Seven: Positive Impact on Mother/Infant Wellbeing. A theme common between two participants was that of the positive impact of the BFS on both their maternal wellbeing and their feelings of attachment and closeness with their baby.

Anna: *"Ahh it did yea, yup it really did"" I think it's just the reassurance that it's okay and that you don't have to have it perfect...it's like a journey type thing and to have the LC say that was great"*

Holly: *"I don't specifically remember sitting there and being like...you know gazing at him and thinking oh my god he's amazing...but I'm sure I did.*

Anna: *I would say yes* (that she felt closer to her baby) *because um we were both so settled in that experience"*

Anna also recalled specific advice she was given by the LC around pressure points that assisted her in creating calmness during feeding which in turn facilitated increased closeness during this time.

Anna: *"it's really important for babies to have that contact like the change like even when she was just showing the repositioning and all that kind of stuff...like she was calm, I was calm it was just amazing"*

Chapter Six: Discussion

Although evidentially demonstrated to have positive impact on physical, emotional and psychological wellbeing, breastfeeding can be a complex experience for both new and seasoned mothers and difficulty breastfeeding can negatively impact both maternal and infant wellbeing. The aim of the current study was to examine mothers' perceptions and experiences of breastfeeding both prior to and following engagement with the Waitaha Primary Health BFS to evaluate the impact of the service on the breastfeeding experience and to identify aspects of the service that may influence or impede positive change. In particular, this research sought to explore the impact that the breastfeeding intervention provided by the Waitaha BFS had on the psychological and emotional wellbeing of the mother/infant dyads referred to the service.

Comparison of quantitative and qualitative data

Daily survey data findings, presented in graph form and examined using visual analysis suggested mixed results in terms of a direct impact of contact with the BFS on self-reported breastfeeding difficulty, breastfeeding confidence, maternal wellbeing and attachment across participants. Katie's data for breastfeeding difficulty and confidence suggest positive and enduring change at some point during the six-week data collection period. Although there was a small decrease for both breastfeeding difficulty and confidence in the last few weeks, this could be attributed to Katie's increased anxiety about her infant's weight gain as time passed from a weigh-in. However, it appears that her contact with the BFS had little impact on both her wellbeing and her feelings of attachment with her baby. The graphed data on Katie's wellbeing over the six weeks showed minor change following each interaction with the BFS. Further, Katie's ratings of her attachment with her baby over the entire six-week period were high and show only a small increase following her second interaction with the

BFS. Katie's follow-up interview shed light on these findings, in that she reported experiencing post-natal depression after the birth of her second child. Therefore, in comparison her sense of wellbeing this time around was more positive. Katie's interview data also suggest, from her perspective, that her feelings of attachment with her baby were not impacted by her breastfeeding difficulties, status or engagement with the BFS and that she would have that bond regardless, which was consistent with the graphed data.

In comparison to Katie, both Holly and Anna's graphed data suggest a more varied experience in terms of the impact of the BFS on breastfeeding difficulty, breastfeeding confidence and maternal wellbeing. For these measures, Holly's graphed data suggest initial improvements following contact with the BFS, followed by high variability and the data returning to baseline levels towards the end of the six-week period. These findings are supported by interview data in that, although she felt that the BFS met her needs in regard to the breastfeeding difficulties that led to her referral to the service, she also indicated that other issues arose in the weeks following that possibly impacted her experience of breastfeeding difficulty and confidence and maternal wellbeing. Similar to Katie, the graphed of Holly's feelings of attachment for her baby suggest a small increase following her first contact with the BFS which then remained relatively consistent with her levels of baseline attachment. This suggests that her contact with the BFS had little impact on her feelings of attachment and closeness with her baby.

Anna's graphed data, in comparison to both Katie and Holly's, was highly variable over the six-week data collection period, with no consistent pattern for any measures nor a trend of positive improvement following her home visit with the BFS. These findings are consistent with Anna's follow-up interview data in that she described continued breastfeeding difficulty related to technique and lifestyle incompatibility (could not fit breastfeeding around her lifestyle) even after her visit with the BFS (LC). She described the visit as informative and

positive. The positive impact of the BFS on her wellbeing and attachment to her baby as described by Anna in her interview, were not reflected in the graphed data (which decreased to low levels over the data collection period). It may have been that problems external to breastfeeding were also impacting her experience of wellbeing and attachment during this period which she did not report during the follow-up interview. Although all participants reported feeling internalized and external pressure to breastfeed, Anna was the only one to discuss specific pressure from her partner in the form of his cultural expectations as a Samoan male of her being able to manage breastfeeding similar to the women in his family. Samoan culture (particularly in the home) tends to be patriarchal in nature with gender roles and expectations placing care for children more solely in the hands of the female/wife/mother (Fairbairn-Dunlop et al., 2016). As discussed previously, qualitative research has suggested the positive impact that practical and emotional support of fathers/partners can have in overcoming challenges and persevering with breastfeeding (Nickerson et al., 2012; Rempel et al., 2017). Therefore, it is possible (although difficult to determine without more information around environmental factors during this period) that for Anna, being aware of the expectations that were being placed on her, combined with the difficulties she was experiencing with breastfeeding and feeling unable to ask for practical support from her husband, acted as an additional stressor that contributed to the decision to supplement with formula (and ultimately cessation of breastfeeding). Further to this, although Anna's self-reported attachment to her baby was high relative to her wellbeing during baseline and following her contact with the BFS, there remained significant variability in this data suggesting high variability in her feelings. Therefore, the graphed data suggests that Anna's feelings of attachment were impacted by her breastfeeding experiences but that this likely occurred alongside other environmental factors. This is in contrast to Katie and Holly's feelings of attachment with their baby, which do not seem to have been impacted by their

breastfeeding experience during baseline or following contact with the BFS. According to previous research, difficulty breastfeeding and self-reported inconsistency in feelings of attachment and closeness with her baby could be a risk factor for the development of maternal sensitivity and secure attachment relationship (Britton et al., 2006; Tharner et al., 2012; Weaver et al., 2018).

In summary, Katie's overall experience according to her graphed data suggests she experienced less breastfeeding difficulty and higher breastfeeding confidence over time than both Holly and Anna and further, that her breastfeeding experience was positively influenced by her engagement with the BFS. It appears from the graphed data that Holly experienced less tumultuous levels of breastfeeding difficulty and confidence than Anna. Although, she experienced less positive long-term change in her levels of difficulty and confidence in comparison to Katie. Differences in experience and exposure to breastfeeding prior to participation in this study could account for some of the differences. Previous breastfeeding experience and increased prior exposure to and knowledge of breastfeeding has been found to be a protective factor in overcoming breastfeeding issues (Forster et al., 2006). Katie had experiences of breastfeeding two children prior to the child she was breastfeeding at the time of this study which likely aided her in overcoming difficulties and maintaining a good level of maternal wellbeing despite experiencing breastfeeding difficulty. In comparison to this, both Holly and Anna were first time mothers and had little exposure to, and no experience of, breastfeeding to draw on in overcoming difficulties breastfeeding.

In terms of maternal wellbeing, the graphed data suggests that, at an individual level, self-reported maternal wellbeing maybe linked to breastfeeding difficulty and confidence in that there is a similar pattern for each participant. For example, as Katies difficulty decreased and her confidence increased, her maternal wellbeing also increased and became more consistent. Similarly, to this, Holly's self-reported maternal wellbeing rose and then fell again towards

the end of the data collection period as did her breastfeeding difficulty and confidence. Anna's breastfeeding difficulty and confidence post contact with the BFS were variability which mimics the variability in her self-reported wellbeing post BFS contact.

As discussed in the literature review, previous research has found that breastfeeding can act as protective factor in the development of post-natal depression (PND) symptoms and conversely that difficulty breastfeeding can act as a risk factor in the development of PND (Hamdan & Tamim, 2012; Mezzacappa & Katkin, 2002). Further to this, as previously discussed, qualitative literature has explored the relationship between breastfeeding, maternal wellbeing and the developing "good mother" identity, with findings showing that difficulty breastfeeding can impact not only on this developing identity but also on overall maternal wellbeing (Andrew & Harvey, 2011; Hinsliff-Smith et al., 2014; Marshall et al., 2007). The findings of the current study provide some support for other research that finds a connection between breastfeeding experience and individual maternal wellbeing. However, it is essential to keep in mind that breastfeeding is not a sole stressor in the lives of these participants, nor any mothers, and therefore to draw conclusions regarding the direct impact of breastfeeding on maternal wellbeing for these participants would require a more robust understanding of their individual environments.

Perceptions and experiences of breastfeeding prior to contact with the BFS

Baseline data from surveys for each participant were limited due to the responsive nature of the BFS and therefore this data is unable to provide a comprehensive understanding of the perceptions and experiences of participants prior to their contact with the BFS. However, follow-up interview data can more assist in examining and understanding their perceptions and experiences. Common across participants was that prior to referral to and engagement with the BFS, each participant had experienced significant distress related to their

breastfeeding difficulty. This appears to have been due to a combination of factors, such as lack of preparedness for the pain and difficulty that breastfeeding can cause, internal and external pressure to get it right, uncertainty about providing enough breastmilk and early conflicting and inconsistent breastfeeding advice and support from professionals. The participants described feeling unprepared for the realities of breastfeeding, such as pain and technical issues (such as difficulty latching and being unable to position their baby adequately), which they found overwhelming, distressing and which turned breastfeeding into and overall negative experience. This was true even for Katie who had successfully breastfed two other children prior to her current baby. These findings are consistent with other qualitative research that suggests that mismatch between pre-birth expectations and post-birth realities of breastfeeding can negatively impact the individual breastfeeding experience (Hauck & Irurita, 2003; Hinsliff-Smith et al., 2014; Kronborg et al., 2015). In Kronburg's (2015) study participants still had memories of the pain and extreme discomfort the had experienced early in their breastfeeding journey using wording such as "dreadful" and "being in hell" to describe the experience, even though they had begun breastfeeding several months prior to providing qualitative data. This is similar to the experiences described by the participants in the current study who described the pain of breastfeeding as being a contributing factor to their referral to the BFS. Holly and Anna, both first time mothers, described assuming that breastfeeding would come naturally and being distressed when things did not work out the way they had expected. Further to this, both Holly and Anna experienced complications during emergency caesarean births which in itself can be a cause of psychological and physical distress (Benton et al., 2019) and has been associated with increased likelihood of breastfeeding difficulties and shorter breastfeeding duration (Hobbs et al., 2016; Tully & Ball, 2014).

Nutritional uncertainty was another common theme found in follow-up interviews. Uncertainty about whether or not their baby was receiving enough breastmilk was something that worried all participants at some point prior to their referral to the BFS and was a factor that contributed to their referral. This finding is consistent with other qualitative research that suggests that breastfeeding women often report insufficient breastmilk production as a reason for cessation of breastfeeding. However, this is often a misguided perception based on lack of understanding about breastmilk production (Arora et al., 2000; Brown et al., 2014; Galipeau et al., 2017). For both Katie and Holly, this was a particularly difficult experience. Katie's concerns centred around the perception that she was not having enough breastmilk which occurred after an offhand comment from her midwife that, although well intentioned, had a detrimental impact on her breastfeeding confidence and belief that she was provide adequate breastmilk for her baby. This experience is also described in Schmied et al's (2011) study in which participants reported feeling that offhand comments from professionals, although well intentioned, can have negative roll-on effects which in turn impacts breastfeeding confidence and overall wellbeing.

For Katie, the subsequent finding that her baby was not making the expected weight gains did not fit with her previous experiences of breastfeeding. This increased her anxiety about her supply that could only be appeased when her baby had weigh-ins and knew that her baby was gaining enough weight. As such, her breastfeeding confidence was tied to these weigh-ins and her being reassured that she was supplying enough milk. This is similar to experiences described in Marshall, Godfrey & Renfrew's (2017) study that explored the experiences of mothers managing breastfeeding and their merging identities as a woman and a mother. They identified the theme *"I wasn't sure there was enough milk"* and many of their participants found weigh-ins and the subsequent knowledge that their baby was gain weight as reassuring. Holly was also concerned about her supply in that she was not be sure how much breastmilk

he was getting and was further concern about her son's breastmilk intake as he would often fall asleep minutes after beginning a feed and then would not settle when put down for sleeps. As she termed it, she was *"convinced he was starving."* However, unlike Katie, weigh-ins that showed he was gaining more than the average amount of weight for his age did not decrease her anxiety that he was not getting enough milk. In line with this, a common finding in qualitative research about breastmilk supply/intake uncertainty is that mothers often find it difficult not knowing or being able to measure the specific amount of milk that their baby is consuming while breastfeeding. This often creates anxiety if babies behave in ways that maybe seen as confirmation of their worries, which negatively impacts breastfeeding confidence (Arora et al., 2000; Kronborg et al., 2015; Marshall et al., 2007). Additionally, Scott & Colin (2002) found that the most persistent reason for stopping breastfeeding given by participants was their baby being unsettled and this being interpreted as poor milk supply.

A significant theme among participants of the current study was that of inconsistent and conflicting advice received from professionals during the early days/weeks post-birth that amplified their confusion and anxiety and contributed to them feeling overwhelmed by their breastfeeding difficulty. For all participants this was a major point of discussion during follow-up interviews and their experiences of conflicting advice and support, particularly during their time in the hospital were similar. All participants citied the number of different midwives/nurses that supported them during their time in the hospital and their individual opinions and advice as often conflicting other professional advice/opinions. Conflicting and inconsistent advice/support from professionals is an overwhelmingly common finding in qualitative research examining breastfeeding experiences of first-time and seasoned mothers (Ayton et al., 2019; Hall & Hauck, 2007; Kronborg et al., 2015; Marshall et al., 2007). In Ayton et al. (2019) participants reported finding being shown many different techniques from professionals in the hospital confusing and participants. Participants in Marshall et al.'s

(2007) study described being told what they should be doing with little explanation of how they should be doing it or why they should be doing it that way. This is particularly resonant with an experience described by Anna in the current study in which she was handed a breast pump by a midwife and told how to use it and then the midwife left the room, leaving her to do it herself. This experience left Anna feeling confused and distressed, as she had never expected to use a breast pump, had no previous experience and had no way to know if she was doing it right. Katie, who did have experience breastfeeding two other children, reported finding the plethora of different advice and opinions given to her by different professionals during both her time in hospital overwhelming and confusing. Holly's experience was similar, although she also attempted to engage with two other private LCs before being referred to the Waitaha BFS. She felt that she still did not receive clear answers to her issues and further that she felt her worries and issues were dismissed.

In summary, prior to their referral to the BFS, each participant had expected their breastfeeding journey to progress a certain way, whether this was based on previous experience as for Katie or based on the expectation of breastfeeding being innate and natural as for Holly and Anna. However, their expectations did not meet the realities for any participant in the current study and conflicting advice and support from professionals served to negatively impact their breastfeeding experience, impede their ability to overcome breastfeeding difficulties and ultimately led to their referral to the Waitaha BFS.

Engagement with the Waitaha BFS: experience of change and mechanisms aiding/impeding change

Both Katie and Holly had different experiences of the BFS intervention delivery compared to Anna. Katie and Holly both had their initial appointments with the LC (the same LC) at the same M4M group location where they also engaged with the group. They also attended the

group and had contact with the LC one further time during the six-week data collection period. Anna had one home visit with and LC and then was able to contact the LC should she need further support but at the time of the follow-up interview she had not done so.

In terms of direct outcomes of the BFS intervention that meet the targets set out by the Ministry of Health around maintaining exclusivity of breastfeeding until 6 months, the results of the current study are mixed. At the time of the follow-up interview Katie was still exclusively breastfeeding, but Holly and Anna were both supplementing with formula (at a later contact Anna had completely switched to formula). Therefore, regarding maintenance of breastfeeding specifically, Katie and Holly had better outcomes following their engagement with the BFS than Anna.

These outcomes could have occurred for multiple reasons, such as (but not limited to): increased support provided by social connection when attending the M4M groups alongside LC support as opposed to home visits; the ability to be able to attend more groups and ease of access to the LC this provides (rather than requiring the LC to revisit in the home); or other personal/environmental circumstances that impeded overcoming breastfeeding difficulties (or a combination of each of these). Kim et al.'s (2018) review of 27 RCT's examining interventions that promoted and supported breastfeeding up to six months found that after the BFHI, interventions that combined two or more methods of intervention strategy increased rates of breastfeeding compared to interventions that used a single method. Additionally, they found that interventions that started prior to birth and continued post-birth were more effective than those that were delivered solely prior to/post-birth. Further to this, Lee, Chang and Chang (2019) study found that the combination of both professional IBCLC education and support, combined with peer support delivered in the early post-birth stages, helped participants improve their breastfeeding self-efficacy and maintained breastfeeding for an extended period. These findings suggest that combinations of intervention strategies can be

beneficial for breastfeeding mothers in the early-post-partum, as opposed to single intervention methods. However, it is difficult to theorize about the reasons why differences in impact and outcomes occurred between participants in the current study due to the small sample size and insufficient environmental and personal information collected. Further and more vigorous research would be required to examine the differences in outcomes and experiences of mothers accessing the LC/M4M group intervention or receiving home-visits.

Over and above the outcomes that meet specific targets set by the MOH, all participants described a positive experience regarding their contact with the BFS and further that their needs at the time were met by the BFS. Participants in the current study were all referred to the Waitaha BFS after not being able to find solutions to the breastfeeding difficulties they were experiencing. Each participant described the experience and knowledge of the BFS LC's as finally providing them with the clarity and reassurance about the breastfeeding difficulties they were experiencing at the time. Anna described being educated and informed by the LC on all the different approaches to positioning a baby to feed, things that she had not known before and that this knowledge enabled her to place less blame on herself for not being able to figure out the way she had been told it should be done by other professionals. These findings are consistent with other qualitative research examining breastfeeding support that found that mothers find value in professional support that is clear, decisive and reassuring (James et al., 2020; Lamontagne et al., 2008; Lucchini-Raies et al., 2019; Schmied et al., 2011). Finding value in straightforward support is an understandable finding considering how stressful and often chaotic the period of the first few weeks/month's post-birth can be for new and experienced mothers.

In addition to these findings and fitting with other qualitative research was the finding in the current study that all participants experienced, and found value in, receiving practical advice, tips and techniques from the BFS LCs (James et al., 2020; Lamontagne et al., 2008; Schmied

et al., 2011). Katie who already had breastfeeding experience described learning of techniques that were used by the LC to stimulate her breastmilk production that were not needed when breastfeeding her previous children. Holly also highlighted the value she found, as a first-time mother, in the information she was able to gather during groups by overhearing interactions between the LC and other mothers that were attending. Although these conversations were not specific to the breastfeeding difficulties Holly had been referred for, she found them relevant to her experiences and useful for gathering other breastfeeding information. Discussion and sharing of information and experiences has also been highlighted as a benefit of the peer-support group format in other qualitative research. Many mothers find that other group members are also experiencing and seeking advice for similar or related issues and that information and learning can be shared in a group environment (Hoddinott et al., 2006; Quinn et al., 2019). Regarding the peer-support leaders that facilitate M4M groups alongside the LCs, neither Katie or Holly (who both attended groups) described specific interactions with peer-leaders that had an impact on their breastfeeding experience, indicating that they had both had been attending groups specifically to seek the advice and support of the LC, and that contact with the M4M group was secondary to this goal.

As described previously, all participants found that their interactions with the BFS, in either form, was positive or influenced some positive change in their breastfeeding experience. In terms of aspects of the service delivery that could impede positive change, Katie identified receiving an offhand comment from the attending LC that her breastfeeding should not be hurting when she knew from previous experience that breastfeeding could be painful and that the pain would eventually subside. However, although this did not negatively impact Katie's experience of the BFS intervention, she acknowledged that for first time mothers, who did not have experience to draw on, overly generalized comments like these may deter first-time mothers from persevering with. This is consistent with Schmied et al's (2011) study which

found that off-hand comments from professionals (however well intentioned) as having a negative impact on participants breastfeeding confidence.

Also highlighted by the participants in the current study was that their interaction with the service, although meeting their needs at the time, did not prevent other breastfeeding difficulties arising in the weeks after engagement with the BFS had ended. Anna described breastfeeding as a constant journey which eventually became too much for her to manage with other external pressures. Similarly, Holly described initially enjoying breastfeeding more following her visits with the BFS but that other issues came up following this that continued to impact her experience. As mentioned previously, although Katies specific issues in terms of her milk production were overcome, her confidence was so tied to her babies' weight that her anxiety remained high. These findings highlight the complexity that is the experience of not only breastfeeding but also being the mother of a new-born.

Implications of Findings

The results of the current study suggest that for this sample prior breastfeeding experience and knowledge influenced the impact that engagement with the BFS had on breastfeeding difficulty, confidence and maternal wellbeing. Specifically, the participant who had prior experience breastfeeding also experienced better outcomes in terms of the impact of the BFS than the two first time mothers. This is consistent with other quantitative and qualitative research that has found that previous breastfeeding experience can act as a protective factor for overcoming breastfeeding difficulties. A recent literature review by Huang et al (2019) found that prior breastfeeding experience was repeatedly linked to increased likelihood for initiation of, and longer duration of, breastfeeding for subsequent babies. Relatedly, negative experiences of breastfeeding can deter mothers from breastfeeding in the future if they have other children. Therefore, the difficult breastfeeding experience for both Holly and Anna

could mean that they are less likely to attempt or maintain breastfeeding for an extended period if they have more children and therefore, may miss the health, psychological and emotional benefits that breastfeeding can provide.

Further to this, the qualitative findings in the current study suggest that the potential impact of the BFS could have been hindered by the significant amount of distress that participants experienced prior to their referral to the service (particularly for first time mothers, Holly and Anna, who had no previous experience to draw on). Both Holly and Anna were referred to the BFS at least 6 weeks after the birth of their baby when they were each described feeling desperate for solutions for the breastfeeding difficulties they were experiencing and had experienced a lot of distress and anxiety. As mentioned previously, the first six weeks post-birth has been established as a particularly sensitive period in which breastfeeding usually starts to decline as breastfeeding becomes unmanageable or persistently difficult. As such, early support for breastfeeding difficulties is essential to facilitate ongoing maintenance of breastfeeding. Therefore, it is possible that for Holly and Anna particularly (as first-time mothers) the referral to the BFS came at a time when they were halfway out the door in terms of maintaining exclusive breastfeeding and as such intervention by the BFS may have come too late to produce outcomes that meet targets set by the Ministry of Health. Conversely to this, Katie was first engaged with the BFS less than two weeks after giving birth and therefore was referred when breastfeeding issues began to occur as opposed to after they had been happening for a while. This, alongside her previous experience with breastfeeding may have been a protective factor in Katie being able to overcome the breastfeeding difficulties and produce better outcomes in terms of breastfeeding difficulty and confidence. However, it must be kept in mind that although outcomes in terms of health targets were mixed for this sample, contact with the BFS was reported by all participants as being a positive experience that met their needs at the time and likely aided in decreasing their anxiety about

breastfeeding. It is likely that other environmental factors and stressors impacted the ability of Holly and Anna to overcome subsequent breastfeeding difficulties they experienced beyond what they had been referred to the service for.

Although generalizations are difficult to make from such a small sample, it is possible that the focus of the Waitaha BFS as a reactive service is a possibly hindering successful long-term outcomes in terms of maintenance of breastfeeding and enhancement of wellbeing, particularly for first time mothers, if there is not a mechanism for mothers to be referred promptly so that they are seen soon after experiencing breastfeeding difficulty. It may also be helpful to offer a proactive breastfeeding support similar to that provided in Lee et al. (2019) which included an antenatal component (an education and support session with an IBCLC) to give mothers tools to combat any issues that may arise and was followed by early (first week) post-birth support sessions. Another example of a proactive approach was Van Dellen et al (2019) who increased duration of breastfeeding by providing six sessions with a IBCLC that started during pregnancy and continued until ten weeks post-birth.

The Waitaha BFS can receive referrals for and provides antenatal education/support for expecting mothers which can be followed-up postnatally. This service is largely aimed at mothers who have had issues breastfeeding previously and women that are pregnant with their first child with personal/physiological/psychological factors that could impede their breastfeeding practice (e.g., a history of breast surgery or extreme anxiety around breastfeeding (Flagg & Busch, 2019). LCs can engage with mothers that are at risk of having breastfeeding issues and can provide assessment, treatment and education in an attempt to prevent issues occurring postnatally. This is not a well utilised aspect of the service due to lack of proactive referrals to the service, particularly from midwives, and was not the focus of the current study. Future research could explore the breastfeeding experience of women who access the BFS antenatally in order to examine differences in overcoming breastfeeding

difficulties, need for additional support and overall experience of these women compared with women who are referred once issues have presented post-birth.

This is not to say that mothers who receive antenatal support will not then experience issues once they give birth, but as evidenced in the findings of this study, mothers who had no previous breastfeeding experience felt that they were unprepared for the realities of breastfeeding and thus did not have tools to overcome issues as they arose. Therefore, increased focus on, and funding for, the promotion and delivery of realistic and comprehensive antenatal education, which included breastfeeding and suggestions for overcoming common difficulties, could decrease the number of referrals for post-natal breastfeeding difficulties as mothers would have more preparation for possible difficulties and know of ways overcome them.

Limitations and Strengths of the Study

This study had several limitations including problems that arose with the recruitment process, the planned representation within participant sample, as well as methodological limitations. Recruitment was slow, resulting in the recruitment period being extended and the inclusion criteria amended to recruit to the minimum three participants required for SCED research. The slow recruitment process could mean that there had either not been a large range of women approached about the study or many women were not interested in even finding out more information about the study. There are consistently high numbers of referrals to the BFS, which was also true during the recruitment phase of the study. There was a small number (ten) of contact details were passed to the researcher by the LCs for mothers who were interested in receiving further information about the study. The LCs reported that they asked as many women as they could and not many consented to being sent information about the study. Further they commented that women being recruited for the study (i.e., women

with a new baby experiencing breastfeeding difficulty) and are often highly distressed and may not have the emotional/mental capacity at the time to be interested in anything above and beyond finding solutions to their breastfeeding difficulties. There is also a possibility that due to the limited capacity and high work volume of the LCs that not every single eligible person was informed of the study during triage. Triaging for the BFS does not always occur at the same time due to the workload demands of the LCs. Therefore, it is possible that mothers were approached at small time intervals that were available (such as in between M4M groups or home visits) and informing mothers of the study may not have been a priority at these times.

Due to recruitment difficulties and the timeframe for a master's level thesis research, the sample in the current research is not representative of all women that access the service. The study was unable recruit any Māori or Pasifika participants as had been planned, although two Pasifika mothers were sent links to more information about participation. Due to the difficulty in recruiting any participants, not just those of a specific ethnicity, it is unclear what factors of the study methodology deterred participation of Māori and Pasifika women beyond deterrents to participation in the study general. Future research examining breastfeeding support services, particularly reactive support services, would need to find ways to overcome these recruitment issues. Further to this, two participants in this study saw the same LC at the same M4M group (not at the same time). This may limit the generalizability of the results to the different locations it covers across Canterbury. Therefore, although findings can be used by Waitaha Primary Health to consider improvement of service delivery, a larger and more representative sample would be required to make any generalizations about the overall impact of the service.

A methodological limitation of this study is the limited number of baseline data collected. The nature of the of the BFS is to be responsive to mothers who are referred to the service as

they are often quite distressed by the time they get referred. As such, there is often little time between a referral being received and triaged and when the woman is seen, giving limited opportunity for baseline data to be collected. The limited baseline data limits the ability to detect patterns in the data and inform understanding of the experiences of the participants before they had contact with the BFS. In any future research recruitment may need to start further back with the organisations/midwives/general practitioners who refer to the BFS approaching mothers about participation when they make a referral. To achieve this, main referrers to the BFS could be approached and asked to inform their clients about the study when they first discuss a referral through to the BFS.

Although this study has several limitations, it also has strengths. Firstly, once participants were recruited, completion of the surveys was high with an average of 74 out of 84 surveys being completed over the six-week data collection period with surveys. The use of short daily surveys, taking under 30 seconds to complete, delivered by text message directly to participants' smartphones appeared to be an effective method to collect Ecological momentary assessment data. All participants that they found the surveys easy to access, understand and complete. Using this repeated measures, real-time and self-report method of examining experience alongside a follow-up interview assists in limiting recall bias that can often occur with purely retrospective methods of data collection and minimize the ethical issues that come with researcher observation (Shiffman et al., 2008). More recently with the increasing commonality of smartphone availability, researchers have employed EMA methods to examine aspects of breastfeeding and post-partum experience (Allen et al., 2018; Demirci & Bogen, 2017) and to assess impacts of other health and psychological interventions (Bai et al., 2020; Daniel et al., 2020; Voogt et al., 2014). The current research adds to the current understanding of the usefulness of EMA methods for gathering real-time data on the individual experience and impact of intervention and provides a specific

procedure that can be applied to capture the impact of breastfeeding support interventions on breastfeeding experience and maternal/infant wellbeing.

Further, the study also utilised a mixed methods approach, including qualitative and quantitative methods which aided in enhancing the understanding of each participants experience of breastfeeding and engagement with the BFS. Although utilizing repeated measures data collection in the form of daily surveys allowed for real-time monitoring of the impact of engagement with the BFS in terms of measurable outcomes (difficulty, confidence, wellbeing and attachment) utilizing a follow-up interview to gather supplementary data added depth to these findings. Without follow-up interviews and the qualitative data collected from them, the findings would not be able to take into account experiences prior to engagement with the service and external factors that impact experience during the data collection period. This is particularly important for the subject matter of this thesis, as breastfeeding is a complex period and experience for mothers of new babies and as such quantitative data alone would struggle to provide comprehensive understanding of the perspectives and experiences of participants. Additionally, inclusion of qualitative data also allowed for the use of thematic analysis to find patterns in experience across participants (Braun & Clarke, 2006). Use of thematic analysis means that this research was able to take understanding of engagement with the BFS beyond simply the individual experience to explore broader patterns within the data.

Conclusion

To conclude, the findings of this study were mixed in terms of direct impact of the Waitaha Baby Feeding Service in improving participants breastfeeding difficulty, confidence, wellbeing, attachment and also maintenance of breastfeeding. More specifically, consistent positive change in measures was only found for the participant that had breastfed two previous children and not for participants that were first time mothers. Although it is difficult

to make generalisations from a small sample such as the one in this study, it was theorized that previous experience and exposure to breastfeeding possibly acted as a protective factor and thus increased the impact that engagement with the BFS had on breastfeeding outcomes. However, although measurable outcomes where mixed, all participants described their engagement with the service as a valuable, informative and an overall positive experience following significant distress in the early days/weeks of breastfeeding. When considered together, these findings indicate the need for increased focus on proactive rather than reactive breastfeeding support due to the time delay from mothers experiencing breastfeeding issues to their referral to the Waitaha BFS. Although further research is needed in this area, increased focus on the antenatal education aspect of the BFS could mean that some women are able to overcome early breastfeeding issues and reduce reactive referrals. Lastly, this study has provided preliminary evidence supporting the use of short, electronically delivered daily surveys as an effective method of collecting real-time data to examine individual experience and impact of a breastfeeding intervention.

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Appendix A – New Zealand Health & Disability Ethics Approval

Health and Disability Ethics Committees
Ministry of Health
133 Molesworth Street
PO Box 5013
Wellington
6011

0800 4 ETHICS
hdecs@health.govt.nz

11 September 2020

Miss Brenna Russell
62 Bletsoe Ave
Spreydon,Christchurch 8024

Dear Miss Russell

Re:	**Ethics ref:**	**20/STH/120**
	Study title:	A Mixed Methods Evaluation of a Canterbury Breast Feeding Support Service: Examining the impact of the Waitaha Primary Health Baby Feeding Service on the individual experience of breastfeeding.

I am pleased to advise that this application has been *approved* by the Southern Health and Disability Ethics Committee. This decision was made through the HDEC-Expedited Review pathway.
The Committee commends you for the effort made in your reply to address HDEC's provisional approval.

Conditions of HDEC approval

HDEC approval for this study is subject to the following conditions being met prior to the commencement of the study in New Zealand. It is your responsibility, and that of the study's sponsor, to ensure that these conditions are met. No further review by the Southern Health and Disability Ethics Committee is required.

Standard conditions:

1. Before the study commences at *any* locality in New Zealand, all relevant regulatory approvals must be obtained.

2. Before the study commences at *each given* locality in New Zealand, it must be authorised by that locality in Online Forms. Locality authorisation confirms that the locality is suitable for the safe and effective conduct of the study, and that local research governance issues have been addressed.

After HDEC review

Please refer to the *Standard Operating Procedures for Health and Disability Ethics Committees* (available on www.ethics.health.govt.nz) for HDEC requirements relating to amendments and other post-approval processes.

Your next progress report is due by 10 September 2021.

Participant access to ACC

The Southern Health and Disability Ethics Committee is satisfied that your study is not a clinical trial that is to be conducted principally for the benefit of the manufacturer or distributor of the medicine or item being trialled. Participants injured as a result of treatment received as part of your study may therefore be eligible for publicly-funded compensation through the Accident Compensation Corporation (ACC).

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,

Mrs Helen Walker
Acting Chairperson
Southern Health and Disability Ethics Committee

Encl: appendix A: documents submitted
appendix B: statement of compliance and list of members

Appendix B: HDEC amendment approval

Health and Disability Ethics Committees
Ministry of Health
133 Molesworth Street
PO Box 5013
Wellington
6011

hdecs@health.govt.nz

15 December 2020

Miss Brenna Russell
62 Bletsoe Ave
Spreydon,Christchurch 8024

Dear Miss Russell,

Re:	**Ethics ref:**	**20/STH/120/AM01**
	Study title:	A Mixed Methods Evaluation of a Canterbury Breast Feeding Support Service: Examining the impact of the Waitaha Primary Health Baby Feeding Service on the individual experience of breastfeeding.

I am pleased to advise that this amendment has been ***approved*** by the Southern Health and Disability Ethics Committee. This decision was made through the HDEC Expedited Review pathway.

The Committee would like to advise the research team that for any future amendments, please ensure that a tracked change version is provided as well as a clean version.

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,

Mrs. Helen Walker
Chairperson (Acting)
Southern Health and Disability Ethics Committee

Encl: appendix A: documents submitted
appendix B: statement of compliance and list of members

Appendix C: Participant Information Sheet (Qualtrics Format)

UC UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

University of Canterbury, College of Arts
Brenna Russell
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Information Sheet for Participants

Evaluating the impact of the Waitaha Primary Health Baby Feeding Service on the individual experience of breastfeeding.

Kia ora, talofa lava, malo le soifua, bula, malo e lelei, kia orana, and welcome, my name is Brenna Russell and I am a Master's student at the University of Canterbury. I also work part-time for Waitaha Primary Health as a Health Navigator. I would like to invite you to be a part of a study that aims to understand the impact that the Waitaha Primary Health Baby Feeding Service has on mothers experience of breastfeeding.

Through daily survey's and a follow-up interview, we are hoping to track your progress through the service and in doing so learn about your experience of the service. We will be aiming to look at how the service has impacted four different areas of your experience, your level of difficulty breastfeeding, your confidence breastfeeding, your own wellbeing and the relationship between yourself and your baby.

There will be two daily surveys. These will each be made up of 4 questions and you will be able to respond using a rating scale from 1-10. Each survey should take no longer than a minute or two. Six weeks after you fill out your first survey you will be contacted to organise a short follow-up interview that will take no more than 45 minutes . As a thank-you for your time and involvement in the project, you will be presented with a voucher for a grocery store. After completing all surveys and interview, you will receive a voucher to the value of $50.

If you wish to be involved, there are a few more things you need to know about the project:

Who can participate?

We are looking for mothers who have been referred to the Waitaha Primary Health Baby Feeding Service for breastfeeding support and that have had an appointment made with the Lactation Consultant. Additionally, participants cannot have been referred for a tongue-tie or require urgent support (mothers who need to be seen within 24 hours of their first phone conversation with the Lactation Consultant).

Participation is completely voluntary, meaning that you can choose not to be involved if you do not want to be. If you choose to be involved, nobody but the researcher and her supervisors will know you are participating. Additionally, you may choose to withdraw from the study at any time up until the data begins to be examined after your follow-up interview on the

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Information Sheet for Participants

Evaluating the impact of the Waitaha Primary Health Baby Feeding Service on the individual experience of breastfeeding.

Kia ora, talofa lava, malo le soifua, bula, malo e lelei, kia orana, and welcome, my name is Brenna Russell and I am a Master's student at the

There will be two daily surveys. These will each be made up of 4 questions and you will be able to respond using a rating scale from 1-10. Each survey should take no longer than a minute or two. Six weeks after you fill out your first survey you will be contacted to organise a short follow-up interview that will take no more than 45 minutes . As a thank-you for your time and involvement in the project, you will be presented with a voucher for a grocery store. After completing all surveys and interview, you will receive a voucher to the value of $50.

If you wish to be involved, there are a few more things you need to know about the project:

Who can participate?

We are looking for mothers who have been referred to the Waitaha Primary Health Baby Feeding Service for breastfeeding support and that have had an appointment made with the Lactation

Participation is completely voluntary, meaning that you can choose not to be involved if you do not want to be. If you choose to be involved, nobody but the researcher and her supervisors will know you are particpating. Additionally, you may choose to withdraw from the study at any time up until the data begins to be examined after your follow-up interview on the 31st October 2020. This means that if you change your mind about participating at any point up until the cutoff date, all of the information you have provided will be removed from the project. If you do not fill out surveys for more than two days in a row, that will be considered an informal drop-out, but your data will be kept.

What we will be asking participants to do:

You will be asked to fill out two very short daily surveys that will be available on your chosen smart device (smartphone, tablet, laptop etc.) and with a link sent via text or email (whichever you prefer). The first survey is included in this link will be accessible once you have read this information sheet and given your consent to participate in the study. Consent must be given, and the first survey filled out **within 24 hours** of being sent for you to be able to participate in the study. From this point you will receive two surveys per day (one midway through the day and one in the early evening) by whichever form of contact you have chosen (text or email). You may also receive one reminder by text or email at the end of each day to fill out that days survey if you have not already done so. Surveys will be sent out and available for you to complete until 6 weeks from when you filled out the first survey. We encourage you to fill out the surveys for as long as possible, even if you have ceased direct contact with the Lactation Consultants or support group. Six weeks after your referral to the Baby Feeding Service you will be contacted directly by the lead researcher to organize a follow-up interview. You may have left the service and stopped filling out surveys by this time, but all participants will be contacted at 6 weeks to keep things consistent. The interview will be conducted by myself, the lead researcher, Brenna Russell and will be conducted either at the Waitaha Primary Health office or in your own home (whichever is preferable to you). Alternatively, interviews can be conducted via zoom video technology. Interviews will take approximately 30-45 minutes and you are welcome to have any

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Recording the follow-up interview:

The follow-up interview be recorded and transferred into written form (or transcribed) as a part of the process of analyzing the information (data) that you have shared. If the follow-up interview is in person, the interviewer will use a Panasonic digital voice recorder to record interviews. If the interview takes place via a video or zoom call, the audio will also be recorded via the technology being used to call. The interviewer (Brenna Russell) will also transfer the follow-up interviews into written form. As part of the process of transferring audio recordings into writing, all information that links participants to the data will be removed (e.g.: fake names used) and printed copies will be kept in locked storage at the University of Canterbury Manawa Building. Electronic copies will be kept on the personal laptop of the researcher and will be password protected. At the end of the project, all recordings of the interviews will be deleted but written transcripts will be kept securely by the University of Canterbury for up to 10 years.

Confidentiality of participant involvement and information:

The only people that will see personal information given by you, hear the follow-up interviews, or see any data that directly links you to the information you have given is the lead researcher (Brenna Russell) and her two supervisors (details given below). Details about anybody else discussed during interviews will also be changed to protect their privacy. In rare cases

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Benefits and potential risks of participation:

As a thank-you for your time and involvement, you will receive a $50 voucher for a supermarket of your choice. If involvement in the project directly causes you any emotional distress or has in impact on their wellbeing, we encourage you to firstly get contact 1737 or Lifeline (over the phone counselling services) or your Doctor. Alternatively, the lead researcher (Brenna) or Mairin Taylor (registered psychologist) will be available discuss options for support. All contact details are provided below. Participation will cause no personal risk in regard to your relationship with Waitaha Primary Health, as even if you have a negative experience of the service and this is reflected in the data as you will be unidentifiable in the final summary of results that will be presented to Waitaha Primary Health. Additionally, results will be presented in a constructive way even if data collected reflects a negative experience.

Data Ownership:

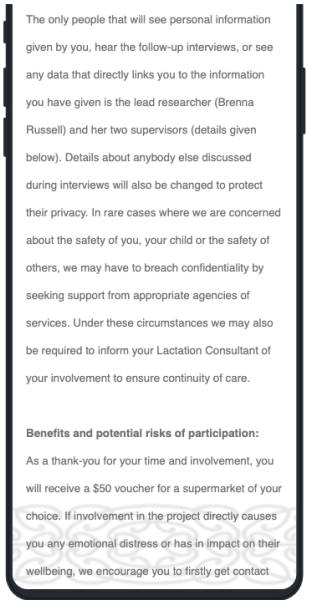
Participants are the owners of their information in this project. As such, you will have the option to review the transcripts of your interview and advise if there is any information that they feel needs to be removed/added and fix any mistakes made. This will be possible up until the cutoff date on October 1st when data analysis will begin. Additionally, you will be invited to review the analysis of data and provide feedback.

Plans for results of this project:

The results for this research will be a part of Brenna Russell's master's Thesis Project for the Child & Family Psychology program at the University of Canterbury. The project is supervised by Dr Mairin Taylor and Dr Eileen Britt, whose details are provided below. A summary of the results will also be given to Waitaha Primary Health for them to use to inform and improve the Baby Feeding Service. Waitaha Primary Health may also choose to use some of this information in their own organisational reports. Additionally, a copy of this thesis will be stored at the University of Canterbury's library and is available to the public. Lastly, some of the information in the thesis could possibly be published in other academic journals or presented at conferences.

What to do next:

If you would like to participate in this project, please click on the red box below to show that you have read and understood the information provided. Then please click the button at the bottom of the page to continue over to the consent form, this must be completed before beginning your first survey. **If you choose to participate, it is recommended that you note down (or screenshot) the contact details below so that you can contact the lead researcher or her supervisors if you have any questions during the survey phase of data collection. Additionally, if you experience any distress during the project, please contact one of the support services listed below or Brenna Russell.**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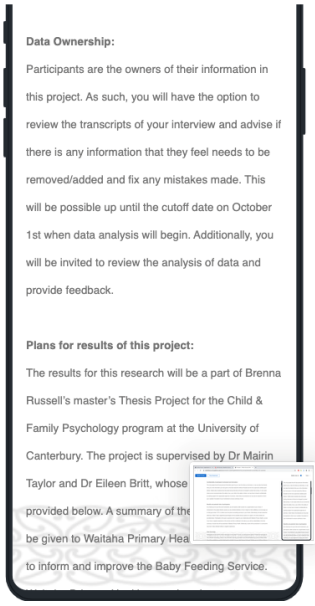
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This project has been reviewed and approved by the Health and Disability Ethics Committee of New Zealand. Concerns or complaints about this study can be communicated directly to the Health and Disability Ethics Committees, Ministry of Health, PO Box 5013, Wellington 6640 (hdecs@health.govt.nz).

Thank you for your time and consideration. Should you have any questions regarding participation please get in touch with Brenna or one of her supervisors between the hours 8am-5pm. If your call is outside these hours please leave a message. 24/7 support options have been listed below if you require support outside of hours. If your query relates to a breastfeeding issue you are experiencing then please contact your lactation consultant or your GP.

Brenna Russell (Ph: 0272287995 & bru29@uclive.ac.nz)

Dr Mairin Taylor (primary supervisor, Email: mairin.taylor@canterbury.ac.nz & Phone: +6433690490)
Dr Eileen Britt (secondary supervisor, Email: eileen.britt@canterbury.ac.nz & Phone: +6433693694)

Support Services:

1737 – free phone/text counselling service available 24/7 (text or call 1737)
Lifeline – 0800 LIFELINE (0800 54335463)

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By pressing the red button to continue to the Consent Form you are indicating that you have read and understood the information provided above.

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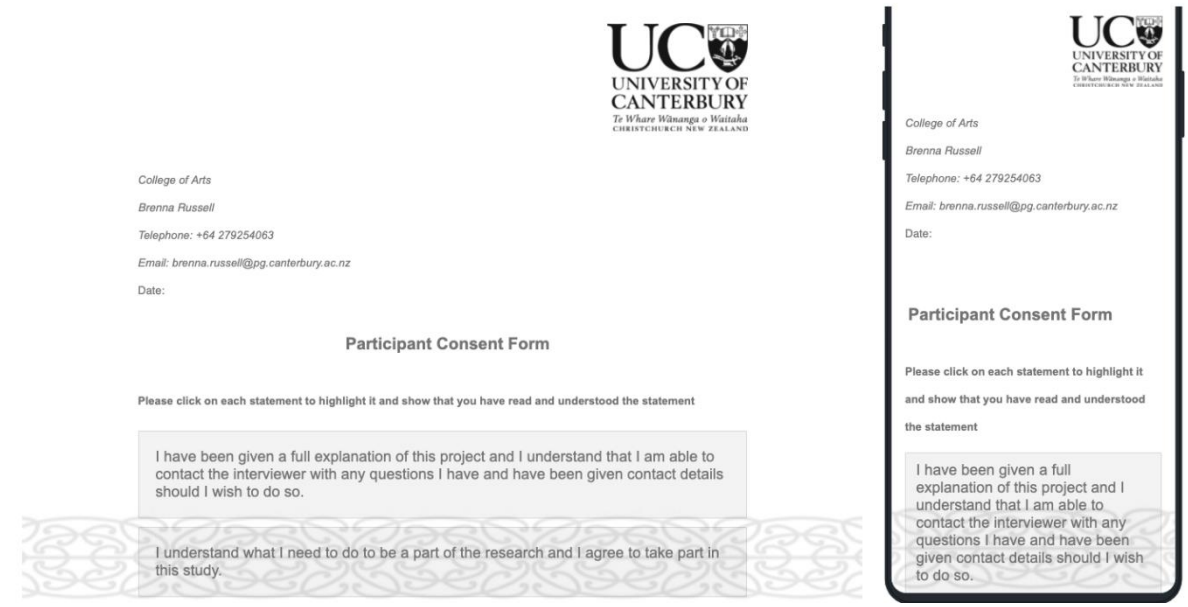
Appendix D: Participant Consent Form (Qualtrics Format)



UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

College of Arts

Brenna Russell

Telephone: +64 279254063

Email: brenna.russell@pg.canterbury.ac.nz

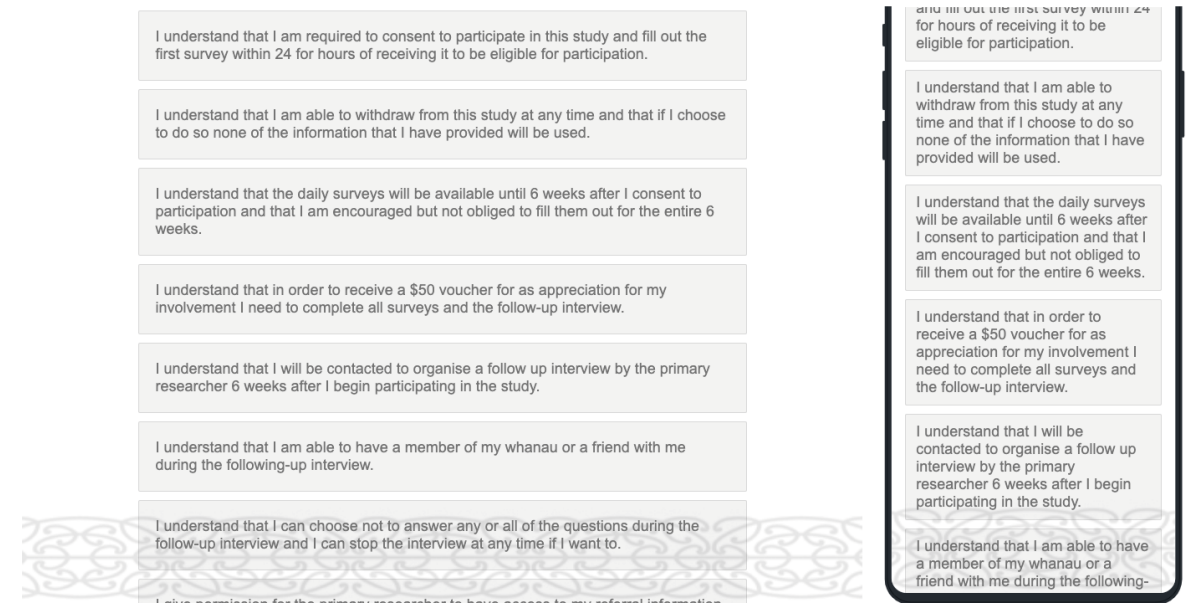
Date:

Participant Consent Form

Please click on each statement to highlight it and show that you have read and understood the statement

I have been given a full explanation of this project and I understand that I am able to contact the interviewer with any questions I have and have been given contact details should I wish to do so.

I understand what I need to do to be a part of the research and I agree to take part in this study.



I understand that I am required to consent to participate in this study and fill out the first survey within 24 for hours of receiving it to be eligible for participation.

I understand that I am able to withdraw from this study at any time and that if I choose to do so none of the information that I have provided will be used.

I understand that the daily surveys will be available until 6 weeks after I consent to participation and that I am encouraged but not obliged to fill them out for the entire 6 weeks.

I understand that in order to receive a $50 voucher for as appreciation for my involvement I need to complete all surveys and the follow-up interview.

I understand that I will be contacted to organise a follow up interview by the primary researcher 6 weeks after I begin participating in the study.

I understand that I am able to have a member of my whanau or a friend with me during the following-up interview.

I understand that I can choose not to answer any or all of the questions during the follow-up interview and I can stop the interview at any time if I want to.

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I give permission for the primary researcher to have access to my referral information, appointment attendance/group attendance information and any relevant reporting information collected by Waitaha Primary Health.

I understand that any information I provide will be kept confidential to the researcher and research team and that any published or reported results will not identify me or my family.

I understand that the final thesis is publicly available, and that a summary of findings will be given to Waitaha Primary Health.

I understand that the findings from this research may also be used in other Waitaha Primary Health documents.

I understand that all information collected for the study will be kept in locked securely or in password protected electronic form and will be destroyed after ten years.

I understand the risks associated with taking part and how they will be managed.

I understand that in rare circumstances in which there is concern for my safety, the safety of my child or others, that privacy and confidentiality may be breached to seek appropriate support. This may also involve disclosing my participation to my lactation consultant.

I understand that I can contact the researcher Brenna Russell, bru29@uclive.ac.nz, or supervisor Dr Mairin Taylor, mairin.taylor@canterbury.ac.nz or Dr Eileen Britt, eileen.britt@canterbury.ac.nz for further information. If I have any complaints, concerns or complaints about this study can be communicated directly to the Health and Disability Ethics Committees, Ministry of Health, PO Box 5013, Wellington 6640 (hdecs@health.govt.nz).

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Powered by Qualtrics

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CHRISTCHURCH NEW ZEALAND

Do you want to receive survey links by text (SMS) or email?

Text (SMS)

Email

Participant consent form continued

Would you prefer to be contacted by phone or email to organise the follow-up interview? *Please provide details of your preferred method of contact when you provide your electronic* signature *below*

Phone

Email

Would you like a typed copy of the interview once it has been typed? You can read it and correct or change it if you want to.

Yes

No

Do you want this sent by email or post? If post, please *write your postal address below*. If email please provide your email address.

Would you like to be emailed a copy of the recording of your interview?

Yes

No

Would you like receive the final thesis at the end of the project? (This will be in 2021)

Yes

No

By giving my electronic signature below and clicking the red button, I agree to participate in this research project. (please type your full name and todays date below)

Once you have clicked the red button you will be taken to your first survey

Full name
Date
Phone number
Email

→

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Full name
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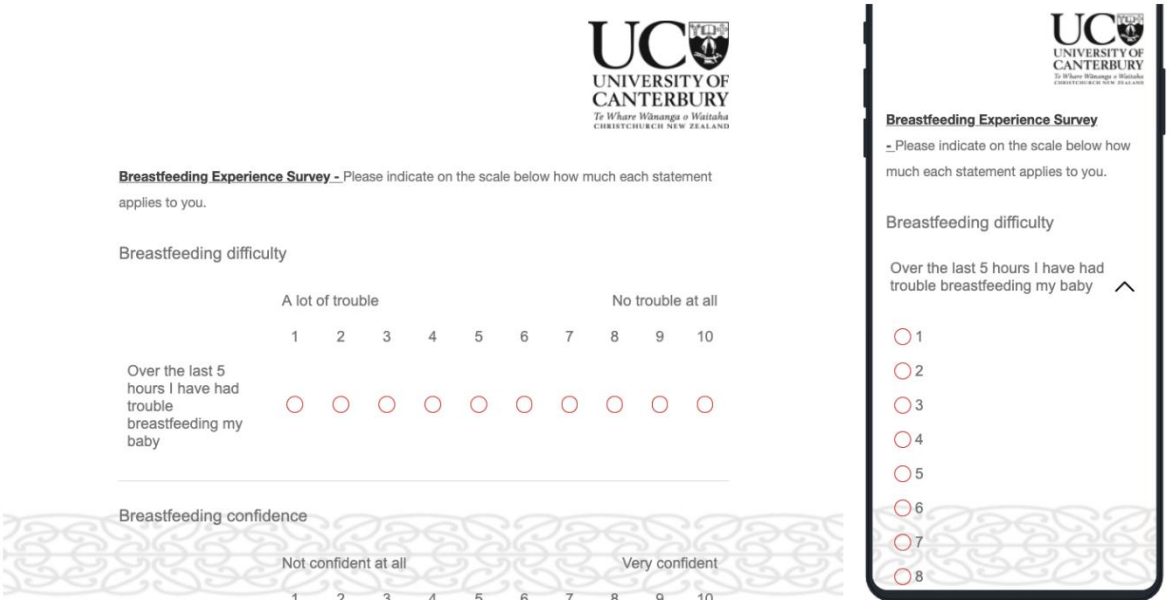
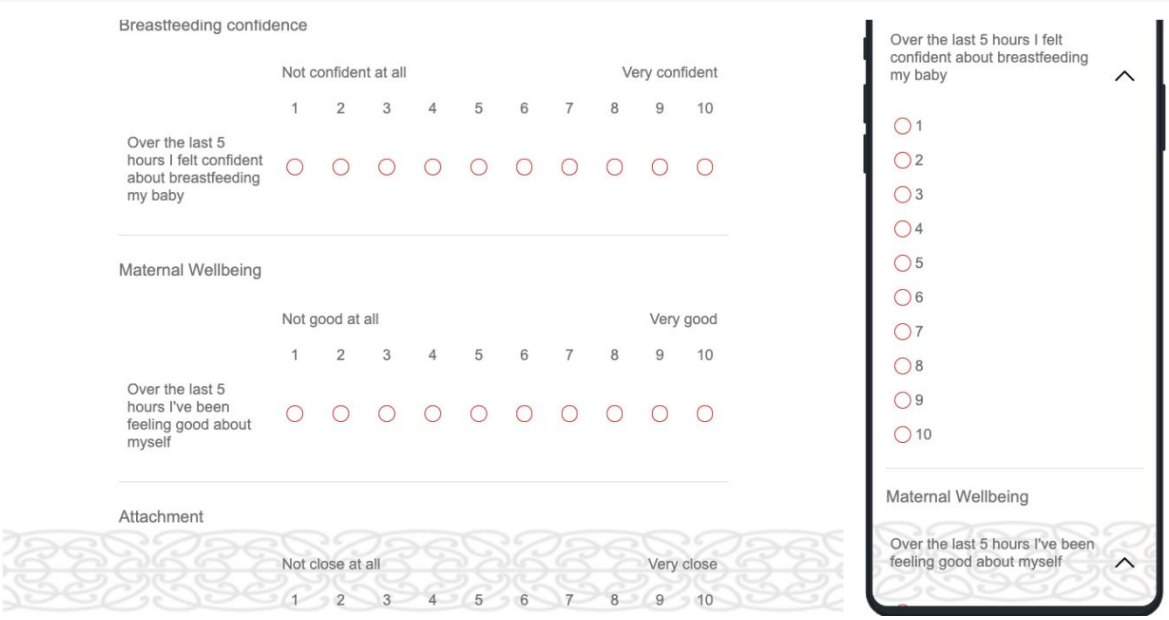
Appendix E: Breastfeeding Experience Survey (Qualtrics Format)






Attachment
Not close at all
Very close
1 2 3 4 5 6 7 8 9 10
Over the last 5 hours I have felt close to my baby
Support Services: Should you have any questions regarding participation please get in touch with Brenna or one of her supervisors between the hours 8am-5pm. If your call is outside these hours please leave a message. 24/7 support options have been listed below if you require support outside of hours. If your query relates to a breastfeeding issue you are experiencing then please contact your lactation consultant or your GP.
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Over the last 5 hours I have felt close to my baby
1
2
3
4
5
6
7
8
9
10
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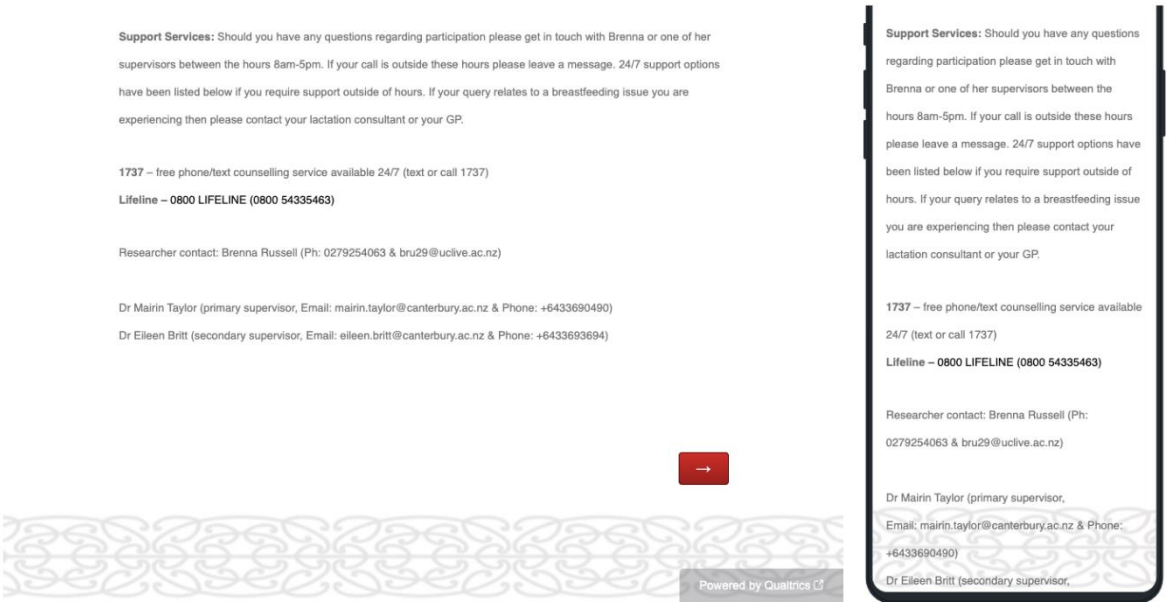
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Dr Eileen Britt (secondary supervisor,

Appendix F: Follow-up interview schedule

Follow-up interview schedule

Welcome and reintroduction to the research:

- The primary researcher/interviewer will begin by thanking the participant for their participation throughout the study. The interviewer, Brenna Russell, will give participants a brief introduction herself, clarify her role in the research and her position at Waitaha Primary Health.
- The interviewer will review with participants all of the information given to participants at the beginning of the study (including how the information gathered during the study will be used) and the consent form (also returned at the beginning of the study). The interviewer will then describe to participants how a semi-structured interview works and that explain that the participant is free to ask for clarification around questions and further, is free to decline answering any questions during the interview by asking the interviewer to move on to the next question. Additionally, participants will be re-informed that the interviews will be recorded and then transcribed post-interview.
- Participants will have been offered at the beginning of the study as part of the consent process, the option of reviewing the transcript of the interview and that that they are able to request that amendments be made if they do not agree with any part of the transcription. Therefore, they will have already indicated if they would like to review transcripts and other data collected. Participant that have already confirmed that they would like to review the transcript then the interviewer will give them an approximate timeline of when transcription will be complete. Participants who did not indicate in the original consent form that they would like to review their transcript will be given another opportunity to do so.
- The interviewer will then turn on recording device and begin interview.

1. Perception and experience of breastfeeding prior to contact with the Waitaha Primary Health BFS

- Did you have any personal perceptions or experiences of breastfeeding prior to giving birth to this baby?
- Can you tell me about your experiences breastfeeding your baby prior to your referral to the Lactation Consultant (BFS)?
- Were you feeling confident about breastfeeding your baby prior to being referred to the BFS?

2. Perceptions and experience of breastfeeding following contact with the Waitaha Primary Health BFS

- Can you tell me about your experience of breastfeeding after your contact with the BFS? (i.e.: after any contact with the lactation consultant and M4M groups?)
- Overall, have your perceptions and feelings towards breastfeeding changed since having contact with the BFS? If yes, how?

3. Specific interactions with the service that contributed to change

- Can you give me (or do you have any?) some specific examples of interactions with the service that were particularly helpful to your breastfeeding experience?
- Were there any interactions during your time with the service (or parts of the service) that you did not find particularly helpful?

4. Impact on maternal/infant wellbeing

- Overall, do you feel as though your wellbeing has improved since your contact with the BFS?
- Do you feel closer to your baby as a result of your contact with the BFS?

5. Experiences of and access to the service

- Over-all do you feel like the Baby feeding service meet your needs?
- Do you feel that your cultural and/or language needs were considered and attended to by the service?
- Is there anything that the BFS could do differently in order for the service to meet your needs?

Interview conclusion and debrief:

Following the participants response to the final question the primary researcher will thank participants for their time and involvement in the project. There is the potential that participation in the follow-up interview (and even the project in general) may have triggered or exacerbated emotional or mental distress of participants in asking them to reflect on a time and a process that may have been particularly stressful for them. Therefore, participants will be given the contact details of a 24-hour 7 days a week phone/text counselling service 1737 or be encouraged to contact their GP. Additionally, they will have the contact details of both the primary researcher and supervisor (Dr Mairin Taylor, registered clinical psychologist) and advised to make contact if they are feeling distressed or overwhelmed and they have already attempted to find support via 1737 and/or their GP.